Volume 93 Number 20

STEEL

For forty-eight Years—IRON TRADE REVIEW

PRODUCTION • PROCESSING • DISTRIBUTION • USE

The Week in Perspective

UNFILLED tonnage is dead! Long live monthly shipments! A victim of pernicious anemia at an age of over 30 years, the Steel corporation monthly unfilled tonnage index, at one time a premier indicator of business, has met its end at the hands of NRA. In its place (p. 10), figures on monthly shipments are being released, the first of these reports for October revealing an unexpectedly strong situation. . . . Current steel production (p. 11) is still easing, although the brakes appear to be taking hold with the operating rate edging off to 24 per cent, down 1 point. Appearance of railroad buying of steel is seen as imminent and the gradual acceleration of public works projects (p. 37) is providing a more steadying influence to the markets.

Steel Code Will Carry On, View Held

Fate of the steel code will be determined this week, its 90-day honeymoon expiring Nov. 19. Opinion is practically unanimous (p. 10) that the agreement will be continued when directors of the American Iron and Steel institute meet. . . . George H. Charls, institute secretary, following abdication of the former president, Robert P. Lamont, also (p. 10) has resigned. . . . NRA, imbued with a new conservatism toward industry (p. 13), recognizing interminability of universal codification, has developed a model master code (p. 11), applicable to all industries —a veritable decalogue for business. . . . President Roosevelt has approved the code of fair competition (p. 11) submitted by machine tool builders.

Motor Manufacturers Hurry To Make Shows

With labor trouble settled for the moment, car builders find themselves about a month behind on new model programs, and their dealers even faced with a shortage of present models. Changes in spring suspension systems on 1934 designs, at one time thought to be abandoned, apparently will proceed (p. 15) as originally intended. . . . An eastern dairy recently has placed in service two large motor trucks with 3000-gallon milk tanks, interiors of which are formed (p. 25) of stainless clad steel. Insulation and an outside sheathing protects the contents against undue temperature rise on the 400-mile run made each day. . . . Carrying water under water is the job (p. 25) of a 45-inch welded steel pipeline, recently layed along the bed of a Hollywood, Calif., reservoir to feed into Los Angeles mains.

Continuous Annealing in Gas Atmospheres

An electric furnace for annealing silicon steel strip continuously has been placed in operation (p. 21) at one plant of a large Ohio steelmaker. A protective atmosphere to prevent oxidation of the strip and unique control arrangements for drawing the strip through the furnace and for coiling it after annealing are features. . . .Continuous annealing of fine wire (p. 32) in an atmosphere of hydrogen is being accomplished by an eastern wiremaker, using a recently developed furnace built with a horizontal tube filled with the gas under pressure. . . . Nitriding of forging dies has been found (p. 31) to increase their life several times over the ordinary heat treated die, in certain applications.

Pressure on Metals Changed to Heat

Research into the plastic forming of metals (p. 26) shows that because of the severe and sudden deformations which occur in the rolling of wire rod, or in the forging of small sections under high-speed hammers, an excessive temperature drop is prevented and a temperature rise even may be obtained, in spite of high radiation losses. . . . Radio dispatches from abroad (p. 54) indicate that iron and steel trade in England is improving, with a stronger price situation apparent. Structural and railroad shops are active. Export trade in pig iron is gaining. The international entente has raised prices on several steel products. . . . Temper of Washington is said to be opposed (p. 37) to any rise in prices for heavy products in this country, and the steel industry is not of a mind to challenge this viewpoint.

U. S. Steel Shipments New Barometer; News of Week

MONTHLY reports of shipments of finished steel products are being inaugurated by the United States Steel Corp. as an index to steel activity to succeed the now-defunct unfilled tonnage statements.

First report of the new series, for October, indicates a strong position for that month. Shipments to consumers, at 572,897 tons, were scarcely lower than the 575,161 tons of September and only 18 per cent off from the year's peak—the 701,322 tons shipped in July.

Since the Steel corporation represents 35 to 40 per cent of the industry's capacity, October shipments of the entire industry approximated 1,450,000 tons, assuming that the Corporation got its proportion of business.

October movement of finished material probably was disproportionate to actual consumption because mills in the first half of the month were rolling the concluding specifications against third quarter contracts. However, at 572,897 tons, the showing of the Corporation was more than double the low months of the first quarter.

The Corporation's actual shipments of finished steel products thus far in 1933 are:

	Tons
January	285,138
February	275,929
March	256,793
April	335,321
May	455,302
June	603,937
July	701,322
August	668,155
September	575,161
October	572,897

Unfilled tonnage statements, which have not missed a month in over 50 years and at one time were considered the leading barometer of business, are a victim of NRA. Under the steel code, practically all orders must be shipped within a calendar quarter, hence a vitiation of their value.

Institute

WHETHER the iron and steel code is extended beyond its initial trial period expiring Sunday, Nov. 19, will be decided at a meeting of directors of the American Iron and Steel institute and NRA representatives Wednesday. Beyond a doubt the code will be continued.

Further resolutions adopted at a two-day meeting of the commercial committee of the institute early last week also may come up for approval. The executive administrative committee meets Tuesday. The first of the new tariff compilations undertaken by the tariff committee of the institute and the first report on employment probably will be issued this week.

¶Under circumstances paralleling the resignation of Robert P. Lamont as president of the institute in September, George H. Charls stepped out Nov. 8 as secretary. Original plans relating to market research, trade promotion, and simplification and standardization of products being swept aside by the NRA code, Mr. Charls like Mr. Lamont felt his usefulness to be at an end.

Mr. Charls went with the institute Oct. 1, 1932, resigning as president and treasurer of the National Association of Flat Rolled Steel Manufacturers and prior having been associated with the American Rolling Mill Co., the former United Alloy Steel Corp. and Hiner Structural Steel Co. He has established an office at 1504 Empire State building, New York.

¶Commercial resolution No. 29 of the institute, effective Oct. 27 and affecting the method of quoting railroads, is prompting many demands for clarification. District sales offices generally are referring all railroad inquiries to home offices, where interpretations also appear at variance.

This resolution is designed to permit producers of iron and steel to quote railroads at the point on their lines nearest the supplying mill, rather than make a delivered price at the point of consumption. The object is to obviate railroads paying freight on their own lines on material for their own use.

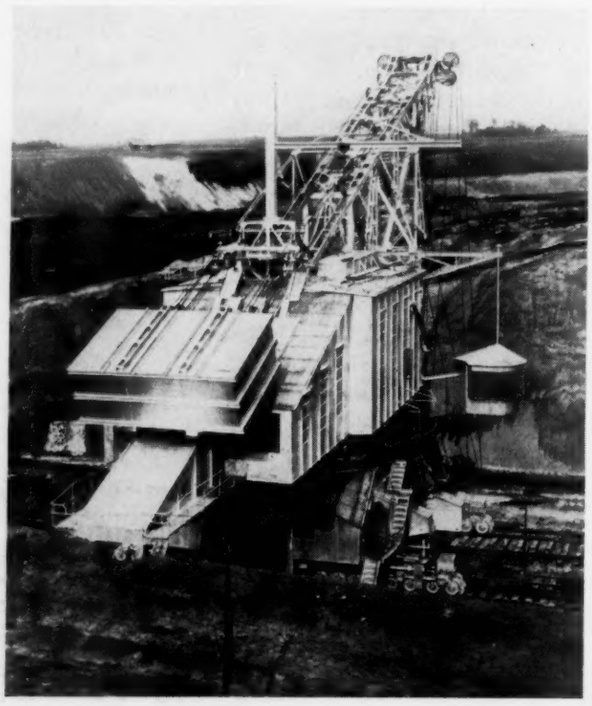
¶Commercial resolution No. 28, effective Nov. 3, permits pig iron unshipped during the third quarter to be deducted from fourth quarter commitment provided any increase in prices is absorbed by the purchaser.

¶Commercial resolution No. 27, effective Nov. 3, grants permission to manufacturers of certain tubular products to allow a deduction from base prices on sales to certain classes of consumers.

¶Commercial resolution No. 8, as amended to be effective Nov. 3, authorizes certain reductions in delivered prices in certain cases where products are delivered by other than all-rail transportation.

¶Commercial resolution No. 6 has been amended effective Nov. 3 establishing allowances with respect to sales in indirect export.

¶First offense under the NRA steel code was considered last week by the commercial committee. A Middle West producer of concrete reinforcing bars was charged with granting a concession of 4 cents per 100 pounds, inadvertently or otherwise, for delivery in the Panama Canal zone.



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GERMANY claims it is the world's largest dredge: This enormous machine is in service in the country's northern coal fields, where it scoops up more than 1000 carloads of coal in a day. Certain parts are built so that they can be compacted securely against the main body if windstorms threaten destruction

Wide World Photo

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Production

THOUGH steel production last week declined in every district except Cleveland, where it lifted 10 points to 46 per cent, and at Buffalo and Wheeling where it remained unchanged at 21 and 38 per cent, there were indications that the rate of decrease was being checked.

STEEL'S estimate for last week was 24 per cent, a decline of 1 point; American Iron and Steel institute forecast for the week was 25.2 per cent.

Pittsburgh mills last week eased 2 points to 23 per cent, with a further slip to 21 indicated for this week. Blast furnace operations at Pittsburgh were at 18 per cent with 11 out of 60 steelworks stacks on.

Chicago's rate dropped only 2 points to 29 per cent last week, compared with a fall of 18 points in the preceding three weeks; it is believed that the district will hold at 29 per cent.

Detroit operations surrendered 18 points, going to 37 per cent when the Great Lakes Steel Corp. took off three of its six open-hearth furnaces.

When the Corrigan, McKinney Steel Co. doubled the number of its active open hearths to eight, and Otis Steel Co. went from two to three, the Cleveland rate jumped 10 points to 46 per cent. National Tube Co. took off one open hearth at Lorain.

Youngstown mills went off 11 points to 21 per cent, expecting to start this week at that level. Plant managers believe the bottom of the slump is near.

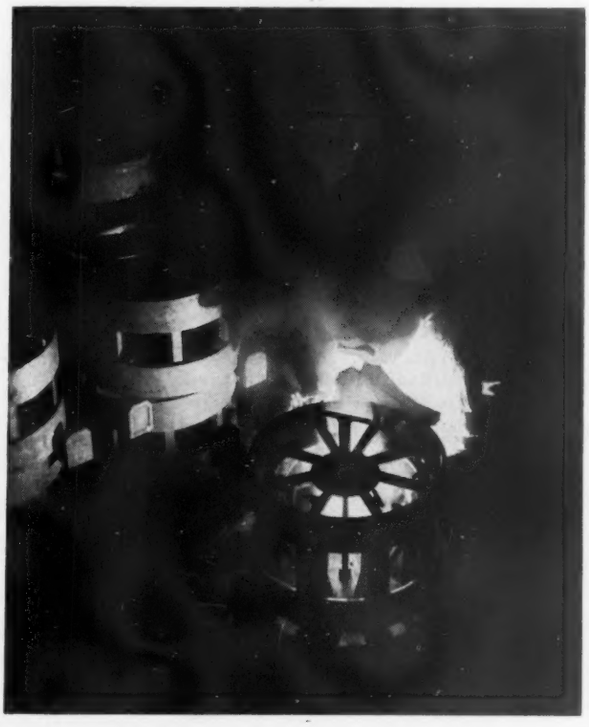
Other operating rates: New England 75 per cent, down 5 points; Birmingham 20 per cent, off 5; and central eastern seaboard 18½ per cent, off ½ point.

¶American Iron and Steel institute report on October production of open-hearth and bessemer steel ingots places the daily rate at 81,225 gross tons, or 37.37 per cent of capacity, compared with 88,884 tons or 40.89 per cent in September, and 41,810 tons or 19.33 per cent in October, 1932. The October total of 2,111,842 tons brought the ten-month total for 1933 up to 19,516,437 tons. In the same period of 1932 production was only 11,429,578 tons.

¶Algoma Steel Corp., Sault Ste. Marie, Ont., will light one blast furnace and five open-hearth steel furnaces Nov. 15 preparatory to rolling 30,000 tons of rails for the Canadian National railroad.

Transportation

SWITCHING rates in Chicago area will be increased Nov. 20, costing shippers $1,500,000 to $5,000,000 annually, unless a suit to enjoin the interstate commerce commission from enforcing its order of July 3 is carried to the United States Supreme Court. Proposed increases per 100 pounds are 2½ to 3 cents on shipments carried over one state line, 2½ to 3½ cents on two-line haul rates, and 3 to 4 cents on three or more line rates.



A FLASH of flame—a hiss—and cold steel melts instantly, runs like water: With the aid of the electric arc, metal is fused to metal quickly and economically. The operator is producing motor frames by the arc welding process

Lincoln Electric Photo

Codes

PRESIDENT ROOSEVELT signed the machine tool and forging machinery code Nov. 8. It becomes effective Nov. 19.

This code was approved by President Roosevelt with an exception giving the Administrator the right on review to disapprove or modify any action taken by the supervisory agency which the code establishes.

The code provides for a 40-hour work week with an extension to 48 hours in times of seasonal or peak demand for six weeks during any 6-month period, with time and one-half for overtime in excess of 8 hours a day.

A minimum wage of 40 cents an hour is provided, with 80 per cent of the minimum for learners. All other employes not covered by the minimum hourly rate will receive not less than $15 a week, with the exception of office boys and girls whose rate will be 80 per cent of the minimum.

This industry has suffered more seriously from the depression than almost any other producer of capital goods, according to General Johnson's letter of transmittal to President Roosevelt. Lack of orders had reduced employment from a 1929 high of 41,000 to a low of 9600 as of June, 1933. With increased orders and the application of the 40 hour week, as provided in the code, it is estimated that employment should be increased approximately 12 per cent with payroll increases of approximately 20 per cent.

"These contributions toward re-employment and public purchasing power," wrote General Johnson to the President, "are being made at sacrifice to the industry, and this condition can be maintained and improved only through early revival of machinery purchasing."

¶NRA has devised a model code, applicable it believes with minor variations to any industry, following experience with 99 codes already approved, 159 on which hearings have been held and 50 scheduled for hearing. Summarized, this model code includes 11 articles:

I.—Purposes.
1. (The provisions of the submitted code, when approved by the President of the United States are to be binding on every member of the individual industry or trade.)

II.—Definitions.
1. (Definitions of the industry, member, employe, etc.)

III.—Hours.
1. Maximum hours.
2. Maximum hours for clerical and office employes.
3. Exceptions (traveling salesmen, etc.)
4. Standard week.
5. Employment by several employes.

IV.—Wages.
1. Minimum wage.
2. Minimum wage for clerical and office employes.
3. Piecework compensation.
4. Rates by occupations.
5. Evasion through re-employment.

6. Wages above minimum.
7. Overtime.
8. Female employes.
9. Handicapped persons.

V.—General Labor Provisions.

1. Child labor.
2. (a) Collective bargaining.
   (b) Company unions and other labor organizations.
   (c) Employers shall comply with hours, etc., rules.
3. Reclassification of employes.
4. Standards for health and safety.
5. State laws with more stringent requirements.
6. Posting of the code when approved.

VI—Code Authority. Organization and Powers and Duties.

Organization.

1. Its function.
2. Members on the C. A.
3. Participating Trade associations, shall have no inequitable restrictions on membership.
4. Maintenance of a "truly representative" character.
5. The activities of the C. A.: Participating in them—assenting to—sharing its expenses.
6. Nonliability of C. A. members for official acts.

Powers and Duties.

7. Following powers and duties, subject to review:
   (a) Adopt by-laws . . . for code administration.
   (b) *Statistical reports* from members.
   (c) Handle code *violations.*
   (d) Utilize trade association and other agencies facilities.
   (e) Co-ordinate this code with related industries.
   (f) Create joint industrial relations board.
   (g) Membership fees—*"who accept the benefits or otherwise assent."*
   (h) NRA code insignia *solely* to those employers who—
   (i) Establish an agency to develop fair trade practices and industrial planning.
   (j) Consider amendments to the code.

General Administrative Provision.

8. Statistical data for government agencies.
9. Method of appealing from code authority's actions.

VII.—Trade Practice Rules.

1. Inaccurate advertising.
2. "Bait" advertising.
3. False billing.
4. Inaccurate labeling.
5. References to competitors.
6. Selling below cost.
7. Threats of law suits.
8. Secret rebates.
9. Selling on consignment.
10. Bribing employes.
11. Interference with another's contracts.
12. Repudiating one's own contract.
13. Coercion.

VIII.—Modification.

1. Right of the President to modify.
2. Procedure of members to modify.

IX.—Monopolies.

1. No oppression of small enterprises.

X.—Price Increases.

1. The policy of the act is *"to increase real purchasing power"*—increased prices, therefore, should be limited to actual increases in seller's costs.

XI—Effective Date.

1. On the *second* Monday after its approval by the President.

¶A 20 minute hearing, supplemented by a conference of labor, consumer and other advisers, sufficed for the gear manufacturing industry code, which provides for a 40-hour week and a basic minimum wage of 40 cents.

¶Peak loads, claimed to be as high as 133 hours a week and including Sunday work, precipitated a controversy at the hearing on the special tool, die and machine shop industry code hearing, it being claimed by representatives of manufacturers that such schedules were the exception and that great tolerance must be granted for individualists who must finish a job upon which they are engaged. The code for the industry calls for a basic 40-hour week, with 48 hours for skilled labor.

¶Importers of iron and steel, desirous of operating under a code, are pressing NRA for one. One deputy administrator has indicated permission will be granted; another is opposed.

¶An advisory committee of the National Association of Manufacturers has been organized to formulate policies on the problems of industry resulting from NRA. In one sense, this council will concentrate the objections of industry. The American Iron and Steel institute is represented on the council.

¶Kenneth Dameron, formerly an instructor at Princeton and Ohio State universities and Rice institute, has been appointed a deputy administrator under Division Administrator Arthur D. Whiteside and will have charge of codes for the distribution industries, including warehouses.

¶A hearing on the metal lath manufacturing industry code has been set for Nov. 23.

¶The President has approved the master code submitted by the Fabricated Metal Products Federation.

News Oddities

ALUMINUM stole a march on steel last week. It added insult to injury right in the very heart of the steel industry—Pittsburgh. From under their very noses steel producers witnessed Mellon's Aluminum Co. of America persuade Pittsburgh city engineers a month ago to specify aluminum to repairs to the Smithfield street bridge there. Last week the bridge was reopened, its steel span buttressed with aluminum plates and channels. To it goes the distinction of being the first major bridge so equipped.

The bridge, built in 1888 and rebuilt in 1911, had been given 5 years to live under its deadweight of steel. So, at 26 cents per pound, 350 tons of aluminum channels and plates last week were put in place to reinforce the floor. Thereby 850 tons of deadweight steel was displaced.

Unusual sales arrangement: Aluminum Co. agrees to take back all aluminum shapes or plates salvaged in the next 10 years, allowing 16 cents per pound; all from 10 to 15 years hence at 13.5 cents; if salvaged in 20 years, 11 cents; and between 20-25 years, 6 cents per pound.

¶During his campaign for mayor, William M. McNair, Democrat, vowed he would double the plant taxes of steel mills within the city limits of Pittsburgh. He was elected. The plants menaced are those of the Jones & Laughlin and Crucible Steel companies.

Financial

SUPERIOR STEEL CORP., Pittsburgh, had a $23,387 profit in the third quarter, a loss of $74,771 in the June quarter, also a net loss of $174,976 in the third quarter of 1932. Net loss of $223,721 for nine months of 1933 is half of net loss of $450,749 in the first nine months of 1932.

¶National Supply Co. of Delaware and subsidiaries, including Spang-Chalfant & Co. Inc., Pittsburgh had consolidated net loss of $2,309,258 in the first nine months of this year against net loss of $3,001,483 the same time a year ago. In the September, 1933 quarter, net loss of $353,116 compared to net loss of $946,821 in the second quarter and $782,487 loss in the third 1932 quarter.

¶Vanadium-Alloys Steel Co., Pittsburgh, has resumed dividends with declaration of a special of 25 cents a share, payable Nov. 20 to Nov. 10 record.

Labor

WAGES in bar iron mills having contracts with the Amalgamated Association of Iron, Steel and Tin Workers will be unchanged for November and December. The card rate for September and October, as determined by mill and association representatives, was 1.50c, unchanged from the preceding bimonthly period. The 15 per cent advance in wages as agreed upon in August, therefore, is extended for November and December, puddlers receiving $10.69½ per ton.

¶Bimonthly examination to determine the sheet mill rate for the Amalgamated Association of Iron, Steel and Tin Workers shows the average selling price of No. 26-27-28 gages in July and August to have been 2.25c, 1½ per cent above base, and hence no change in wages. Comparisons follow:

	1933	1932	1931
Jan.-Feb.	**2.30c**	**2.40c**	**2.60c**
March-April	2.30c	2.30c	2.65c
May-June	2.30c	2.30c	2.50c
July-Aug.	2.25c	2.30c	2.40c
Sept.-Oct.		2.30c	2.40c
Nov.-Dec.		2.30c	2.40c
Yearly average		2.31c	2.49c

WINDOWS OF WASHINGTON

N in NRA Is for National

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Roosevelt Labels Industry

• • •

What of Security Owners?

WASHINGTON

INDUSTRY would be less surprised and a little less aggrieved by what is happening in Washington if it realized fully that the N in NRA stands for national.

With pardonable hope, industry has been relating the President's program in terms of itself, reacting at times as if it were the industrial instead of the national recovery administration and becoming increasingly critical as the program failed to click—from its standpoint.

But that N is a key letter to the President; he permits nothing to obscure the national character of the recovery which is his objective.

Industry, general business and agriculture to him are only so many tools to be used for restoring prosperity. Their form is secondary to their utility.

In fact, the President's commitment to the "new deal" precludes the preservation of much of the time-honored organization of industry, and any resuscitation of it will be entirely incidental to the achievement of recovery.

Like it or not, the entire commercial fabric of the country is being regarded in Washington as a means and not as an end. NRA must be interpreted literally.

WHEN Mr. Roosevelt came to the presidency last March, industry—meaning thereby all business—plainly was on the defensive.

It was weary, after fighting a rearguard action against depression for three and one half years.

The best brains of the country had gone before a senate committee in January and February without tendering a workable plan for promoting recovery. The banking system was breaking down.

So, on entering office, the President assumed that management was bankrupt, and apparently he has not changed his mind. Not one outstanding industrialist has he summoned to Washington for counsel.

A man who circulates freely in Washington and contacts the inner circle describes the President's thinking as an association of ideas.

This man maintains that when steel is mentioned the President immediately visions the 12-hour day, bonuses, a fixed market on rails, a beleaguered Homestead.

Likewise, textiles connote to the President a century of child labor; coal, underground serfdom; automobiles, the nonco-operative Henry Ford; railroads, high-salaried executives riding in private cars and confused by the new forms of transportation; banks, Mitchell and Wiggin; Wall Street, wolves of finance; and so on.

In the President's mental spectrum there is said to be only black and white—no gray—and very little of the white for industry, although in his relations with executives the President has been the soul of kindness and courtesy.

THE President is keenly conscious that he won the November election last year over the almost unanimous opposition of industry.

In contacting NRA, industry has either been understandingly reluctant to bow to the yoke of government control or has become so fagged in fighting depression that it has eagerly accepted any outstreched hand. In either event, this has been misinterpreted as stubbornness or weakness.

Washington also has not forgotten the hopeless division of industry last spring when the recovery act was before congress, a situation repeated last week when the business community of the country broke into two pieces when the Swope plan for self-government was proposed.

Steel withdrew its employe representation plan from its code without an open struggle. Bituminous coal fell apart into 15 groups in considering its code. Oil also split wide open, and rubber has not yet got together.

The supposedly tight organization of industry by trade associations, in which the government placed much reliance at the outset of NRA, speedily proved to be a myth.

So, rightly or wrongly, the administration has some very fixed and generally unfavorable ideas concerning industry. It is just possible that a wholly blameless industry would not register with the White House. And there is some reason for believing that the President's mind congenitally is not at ease with industry.

After election and during his early days in the White House the President was surrounded by the young economists who were dubbed the "brain trust." For a short time the so-called conservative treasury group was in favor. But now it is "the professors."

The fact seems to be that the President prefers to expose his mind to theorists rather than to doers.

With the exception of the automobile industry, steel is now more conciliatory than others toward Washington. Without formally recognizing the United Mine Workers, it conceded enough to the administration to adjust the captive coal mine situation. It also compromised on rails as a gesture toward recovery. Following negotiations, steel is allowing the administration to do the talking.

THIS presidential mentality is reminiscent of the early days of Woodrow Wilson, when the catchphrase was the "new freedom" and the federal trade commission was projected for policing industry. Com-

pare this with the "new deal" and NRA.

Roosevelt is the consummate politician, which is nothing derogatory, whereas Wilson was the idealist catapulted from a university to a governorship to the presidency. Wilson was a professor surrounded by politicians; Roosevelt is a politician surrounded by professors.

But no academic dreaming enters the President's consciousness when he thinks of the nation in connection with national recovery. To him the nation very concretely is labor, the farmer and the small shopkeeper, comprising what has been termed "the little fellow."

Not for a moment does he forget that they elected him, and he is cutting the pattern of recovery to fit them. The redistribution of wealth, which is so frequently referred to in Washington, simmers down to this.

Labor looms enormously in this picture, almost giving the administration myopia, largely because William Green and John Lewis constantly parade the 4,000,000 members they claim for the American Federation of Labor.

The farmer bulks large because congress is full of senators and representatives espousing his cause and coming to his rescue, and while the present midwestern revolt does not seem to indicate it, the government probably has done more for the farmer than for all other classes put together.

But since March 4 scarcely one word of comfort has been uttered in Washington on behalf of the white collar man or the security holder, except possibly that the administration's opposition to large salaries may ultimately benefit the latter.

A MAN who is in touch with the trend in Washington contends that this is largely the fault of the so-called middle class and of security owners because they are not vocal.

For example, when the President recently reduced the price of rails from $40 a ton to $36.37½ he was thinking in terms of the employment that would be generated by the bulk order for about 800,000 tons. To him the steel industry meant about 350,000 workmen.

Probably the 500,000 security holders of the steel industry were entirely out of the picture. There was no one in Washington to accompany representatives of the rail mills to the White House and contend that some 500,000 shareholders deserve consideration along with 350,000 workmen.

The United States Steel Corp. now has about 234,000 stockholders, while the average employment of the Corporation during the third quarter was only 197,129 persons. The ratio of Bethlehem Steel Corp. stockholders to employes is 90,000 to 50,000.

A recent compilation shows that 55 leading corporations listed on the New York stock exchange have some 4,000,000 shareholders, about 40 per cent being widows and institutions, these 55 alone equaling the claimed strength of the American Federation of Labor.

It is interesting to speculate whether labor would have received such generous treatment from congress and NRA in connection with the recovery act if the white collar and security owning classes had been represented.

More than one vote was swung in congress by pressure from labor, whereas the majority injured in some manner by class legislation was silent, not offering the confused legislator the support for resisting this pressure.

A movement is now on foot in Washington to remedy this situation.

THIS attitude toward industry is also manifest in the administration's policy on prices.

At a time when gold is being purchased at home and abroad for the express purpose of raising commodity prices, the President himself has depressed the price of rails and NRA is suggesting that automobile prices not be advanced in 1934.

The explanation in Washington is that the term commodity prices refers to wheat, cotton, pork and such products, and not to iron and steel or similar manufactures. The objective is to increase the price the farmer gets for his products but not to increase the price on what he buys.

Some conservatives in Washington who are not in sympathy with the administration's gold-buying policy are critical of the iron and steel industry's stand on prices. Regardless of how much deficits the past few years would have been increased, they maintain that the industry should have slashed prices.

Were Judge Gary alive he would have pruned the price of rails to $25 several years ago, one conservative maintains. Structural steel also would have been reduced sharply to supply some impetus to the construction industry. So even in quarters out of sympathy with the President there are no kind words for steel.

Explaining his position, one of these conservatives considered rebuilding a bathroom in his house as a personal contribution to recovery. While the price was $1500 he delayed; when a bid of $1000 was made he accepted. This authority, incidentally, may resign shortly.

An outstanding government economist, asked to explain how the purchase of gold would affect steel, replied: "Only indirectly. Foreigners, possessing American dollars as a result of the sale of gold, might come into the market for steel. Foreign demand for American farm products might raise the level of farm products and thus stimulate farmers' purchases of automobiles, implements and other products manufactured from steel."

AS a trial balloon and a possible "out" on NRA, the Swope plan for industrial self-government has collapsed so rapidly as not to give its sponsors time to use their parachutes.

Like all idealism, the Swope program was in advance of its time and its immediate complete adoption not a probability. But considering the almost blanket indorsement of General Johnson, it showed that the administration is thinking more conservatively concerning NRA and opened the way to a compromise on the enforcement of codes.

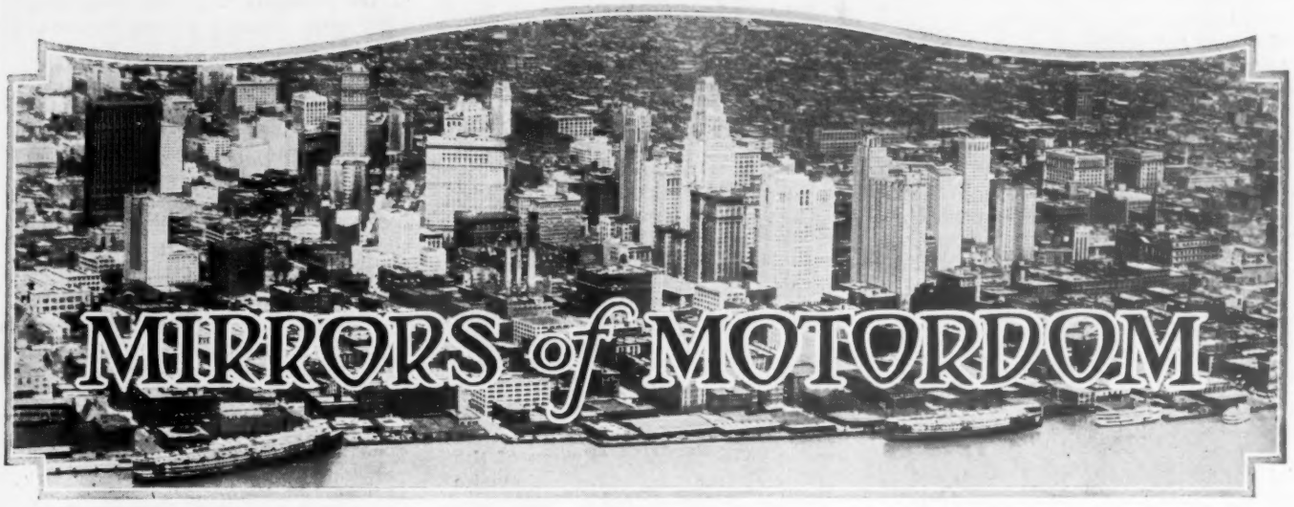
Except for the chamber of commerce of the United States, which might be the national chamber urged by Mr. Swope, the reaction has been negative. Even the business advisory and planning council of the department of commerce, of which Mr. Swope is chairman, is opposed.

Industry in effect having rejected a compromise and apparently standing for complete fredom from government supervision, the administration is now compelled to seek some other method for making NRA palatable. That this will be done shortly is a foregone conclusion, as the opposition to NRA is beginning to register in Washington.

Time, however, is on the side of industry. NRA executives have relinquished their role as the overnight saviors of the country and now agree that their mission is long-range planning. When NRA was withdrawn from cities of 2500 persons and under, the Blue Eagle took flight from 43.8 per cent of the country's population.

Despite reports from General Johnson that he cannot discern any opposition and that even synthetic dead cats are no longer being hurled at him, the opinion in Washington is that an important reorganization of NRA is approaching. PRA and the blue eagle are expected to recede into the distance, a man calculated to command the confidence of industry—Bernard M. Baruch is mentioned—may head up the organization, and all industry placed under a master code, given on page 11.

At no time since March 4 has there been so much confusion over government plans as at present, and last Tuesday's election may have a moderating influence upon the policy of cracking down on industry. Since voters still appear to be in a mood to swat the "ins," congress may be more tractable at its session beginning in January.



Industry Weighing Changes
• • •
New Car Stocks Depleted
• • •
Material Needs Month Late

DETROIT

THE 7-week die and tool strike ended in Detroit, and probably also in Pontiac, Flint and other affected centers by the beginning of this week, automobile manufacturers are hastily reviewing their programs for 1934 to determine how much of them can be carried through before January show time.

Not in recent years has the industry come up to the middle of November with so little accomplished, both in regard to dies and tools and to actual production. Small dies are well in hand, much of this work having been sublet in other cities, but fender and body dies and some retooling for mechanical changes are fully a month behind.

Even with die and tool makers back, at an hourly minimum of 85 cents compared with the demand for 90 cents and with collective bargaining conceded, the industry continues apprehensive over the labor situation. Engine divisions are being watched particularly, as these are the bottlenecks of production, much as die and tool shops are the key to preliminary work.

Nash's experience at Kenosha Friday may be a forerunner. The plant was tied up and 3000 workmen made idle when men on the assembly line struck.

Meanwhile, an actual shortage of new cars is developing. Dealers' showrooms in many cases are virtually cleaned out now, and it will be the middle of January before anything approaching volume delivery of new models can be made.

Chevrolet, for example, has some 7000 dealers and 3000 associates to supply, and an average of only six cars per showroom floor will account for almost two months' production, considering the delays usually encountered in getting a new model under way.

Up to the end of last week the advertising departments of most manufacturers had not seen the new cars. For color advertisements the more important national weeklies require copy eight weeks in advance of the date of publication, and a month is a short time in which to prepare copy. And this is the middle of November.

CHRYSLER appears to be in the best position of any of the larger manufacturers with respect to current models, but is more delayed than some on the new series.

In September and early October, when most of the industry was slowing down, Chrysler was going at full speed, especially with Plymouth and Dodge, and the result is that Chrysler dealers are in position to make deliveries.

Chrysler also took the precaution to arrange its setup so that it could continue with the present lines in case any insuperable delays were encountered on the new ones, but it now appears there will be no occasion to fall back on this.

While Chrysler has vacillated considerably in regard to the elimination of front axles and the independent springing of front wheels, there is every indication that it will proceed with its plans. An inbuilt window ventilation system is certain.

A change in policy on Dodge also is believed to be settled. The Dodge six has been one of the outstanding successes, costing General Motors some sales it believes would have accrued to the Pontiac eight and leading Olds to drop a six in 1934 between the Chevrolet and Pontiac price range.

But Dodge eight has not piled up volume, and Chrysler is without an eight to offer much below $1000 delivered. Hence the assumption in Detroit that Chrysler will have a much lower priced eight to offer in 1934, probably in the Dodge or DeSoto series. The Dodge dealer organization is the envy of most other manufacturers.

General Motors also is apparently proceeding with independent springing of front wheels on all lines. Like Chrysler, at least one of its lines will be radically teardropped.

Forecasting its production has prevented large carryovers by General Motors the past several years but the big buying wave in the third quarter crept up on the industry unawares, and General Motors dealers generally are in close to a soldout position.

Chevrolet already has some production under way on steering mechanisms and was scheduled to reopen its gear and axle plant in Detroit this week. It also is planning shortly to reopen its branch assembly plant at Janesville, Wis., and the Fisher Body branch at Janesville will probably follow suit.

Hudson-Essex, whose sales in October were the best for that month in three years and whose stocks in dealers' hands are the lowest since December, 1923, is making final decisions on its bodies for 1934.

Chances are that while these changes will be radical, they will not go the limits indicated several weeks ago. There may be a new name in this line, and the Terraplane bodies will be considerably larger, in the endeavor to make the bodies commensurate with the showing of the power plant.

AN IMPORTANT reaction of the die and tool makers' strike upon automotive suppliers is to push the season back virtually one month.

Last year the nadir of production

was October, when only 48,702 cars and trucks were assembled. This also was the alltime low. In November, 1932, assemblies recovered to 59,557 units, and in December to 107,353.

October production this year sagged to about 125,000 units, and November has eased off to such an extent that the month is approaching the record low of last October. December, of course, will develop quite a rebound, provided no further labor difficulties appear.

Normally, steel and other materials for new models are beginning to flow into Detroit in increasing volume at this season. Last week the first releases for 1934 models were issued, and these were insignificant. It will be late in the month before anything approaching satisfactory volume is attained, and there are even some doubts about this.

For one thing, automotive interests have large stocks upon which they can draw. For another, some purchasing agents are beginning to speculate on how soon NRA will cease, steel and other codes vanish, a free market return and prices drop—a purchasing agent's perfect cycle. At this time, of course, there is not much tonnage that can be blighted by this thinking.

Chevrolet production in October was 37,669 units, compared with 59,357 in September and 1205 last October. In 10 months, Chevrolet output totals 609,000 units, against 394,000 a year ago.

Ford, tapering radically in the last half of October, assembled a few over 30,000, making its 10-month total about 400,000. Chrysler, also with some 30,000 units for October, probably is about 10,000 ahead of Ford for the year to date.

The Ford layoff of some 9000 workers a week at a time to conform to the automotive code's 35-hour week is not affecting production materially, as men were laid off several weeks ago to scale the plant down to current demand.

Ford has ready for production a slight revision of the current model, the appearance of the car being little different than the present V-8. The small car still is distant from production. An increasing number of V-8 models are coming through with the cast crankshaft.

Detroit is increasingly sympathetic with Mr. Ford and increasingly antagonistic to General Johnson and NRA . . . . Willys-Overland has released some orders for strip, believed by some to be its last, although bondholders are asking for return of the plant . . . . There is some doubt whether Continental will build any more automobiles, though continuing with engines . . . . That General Motors extra dividend is another indication prices will remain stationary.

Died:

CHARLES EDGAR ADAMS, 74, pioneer Cleveland industrialist and civic leader, and chairman of the board, Cleveland Hardware Co., at Charity hospital, Cleveland, Nov. 4. Born and schooled in Cleveland, he began work at the hardware company as corresponding secretary to the late J. H. McBride, then president of the company. Later promotions carried Mr. Adams to the presidency, and in 1931 he was made chairman of the board. He was known throughout the country for his leadership in charity campaigns, having been general chairman of the Cleveland community fund since its inception in 1919. Active in numerous other civic affairs, Mr. Adams at one time was director of the Cleveland Tractor Co. and the Cleveland Industrial Improvement Co.

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Philetus W. Gates, 76, one of the early machinery manufacturers of the Middle West, in Chicago, Nov. 7. At his retirement in 1922, Mr. Gates was president of the Hanna Engineering Works, Chicago, previously having been identified with the Mumford Molding Machine Co., Chicago, later absorbed by the Hanna company. He entered the manufacturing field in 1887 with the Gates Iron Works, which was taken over by the Allis-Chalmers Mfg. Co. in 1901. At that time Mr. Gates became identified with the Allis-Chalmers company, resigning a few years later to become associated with the Hanna organization. He was first president of the National Founders association.

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James B. Cullum, 65, at one time vice president and director of Harbison-Walker Refractories Co., Pittsburgh, at Reading, Pa., Nov. 1. A graduate of Lehigh university, Bethlehem, Pa., as metallurgical engineer in 1890, he was first identified with Coleman Furnace Co., Lebanon, Pa.; later with Harbison-Walker and ultimately became vice president of the latter when he retired in 1906.

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Archibald M. Chisholm, 69, at Duluth, Nov. 5. He was the owner of ore mines in the Mesabi range and at Shattuck, Ariz. Chisholm, Minn., was named in his honor.

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Harold N. McKeon, 41, export manager for the Acme Steel Co., Chicago, at his home, Bell Crest, Long Island, N. Y., Nov. 6.

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John C. Reed, 67, one of the organizers of the Standard Scale & Supply Co., Pittsburgh, at Sewickley, Pa., Nov. 7. At one time he served as treasurer of the company and later was president until illness forced retirement in 1920.

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Arthur E. Kiefer, 77, retired Detroit industrialist and engineer, in Detroit, Nov. 8. In 1887, with James T. Keena and F. A. Schulte, he organized the Detroit Edge Tool Works. Later he acquired ownership of the company and headed it until his retirement in 1917.

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William James Cluff, 56, former president, Canada Pipe & Steel Co. Ltd., in Montreal, Que., Nov. 4.

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A. Eugene Brady, 58, vice president and treasurer, Jenkins Bros., valve manufacturers, at New York, Nov. 4. A native of Athens, N. Y., Mr. Brady had been connected with the Jenkins organization for 40 years.

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George W. Rowell, 91, for many years engaged in manufacturing plows and other farm implements at Waukesha, Wis., Nov. 1. Born in Washington county, Wisconsin, 1843, with his brother, Ira he established the I. B. Rowell Co. at Menominee Falls, Wis., in 1873, later moving the industry to Waukesha. He retired 15 years ago.

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Samuel Lynn Morrow, 60, manufacturer's agent and former chief engineer of the Woodward Iron Co., at his home, Birmingham, Ala., Oct. 29.

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Frederick L. Dilley, 71, founder of the Standard Brake Shoe & Foundry Co. and Finished Steel Products Co., both of Pine Bluff, Ark., at his home there Nov. 3. Mr. Dilley was well known throughout the steel and iron industry of the Southwest for many years.

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Solon J. Stone, for ten years chief engineer, John W. Cowper Co., Buffalo, in an automobile accident near Rochester, N. Y., Nov. 4. Previously he had been associated with James Stewart & Co., New York, and the Lackawanna Bridge Co., Buffalo.

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Frank B. Ansted, 48, former head of the Lexington Motor Co. and the Ansted Steel & Axle Co., Connersville, Ind., and vice president, Metal Auto Parts Co., Indianapolis, at Los Angeles, recently. A graduate of the University of Michigan, Ann Arbor, Mich., he succeeded his father as president of the Lexington Motor Co. in 1917.

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William Francis O'Connor, 52, former manager of the Kansas City, Mo., and Buffalo branches of General Electric Co., Schenectady, N. Y., at his home, Hornell, N. Y., recently, after a long illness.

Industrial Men in the Day's News

B. E. Kibbee, Executive Vice President, Sharon Steel Hoop Co.

Began work as a railroad telegraph operator, "pounding the key" for the Pennsylvania system.

Beginning with Sharon company as night timekeeper, he won promotion to the sales department.

Now, 28 years after his first job with this company, he is executive vice president.

IN TWO years, B. Emerson Kibbee, who has just been appointed executive vice president of Sharon Steel Hoop Co., Sharon, Pa., will celebrate his thirtieth anniversary with the company. Mr. Kibbee is a veteran in experience in the steel industry, and dates his continuous connection with the Sharon company from 1905.

He started his business life as a railroad telegraph operator with the Pennsylvania system in 1899, and for six years "pounded the key" for that road. Then he went to work for the Sharon Steel Hoop Co., as a night timekeeper.

His efficiency won him quick promotion, and soon in succession he was storekeeper, paymaster and then contract clerk. Ultimately, he was transferred to the company's sales department. By 1915, Mr. Kibbee was made general manager of sales; then in 1928 he was named vice president of the company in charge of sales. He also was elected as a director of the company.

A week ago, along with other changes in the Sharon company, chief among which was the decision of Severn P. Ker, chairman of the board and former president, to retire, Mr. Kibbee succeeded to his new title.

He is a member of the American Iron and Steel Institute.

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J. P. Boore, formerly with the tube sales division of Pittsburgh Steel Co., Pittsburgh, has been appointed manager of tube sales for Edgar T. Ward's Sons Co. He has been active for more than 20 years in the manufacture and distribution of seamless steel tubing, one of the principal commodities distributed by the Ward company. The latter is eastern distributor for seamless steel boiler and mechanical tubing manufactured by Pittsburgh Steel Co., and western distributor for Timken Steel & Tube Co., Canton, O.

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J. E. Lose, vice president in charge of operations, Carnegie Steel Co., Pittsburgh, has been elected vice president of the Pittsburgh Coal Exchange, to fill the vacancy caused by resignation of Ralph H. Watson, now vice president, United States Steel Corp., New York.

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G. N. Herman, western sales representative, United Engineering & Foundry Co., Pittsburgh, has resigned to become vice president in charge of sales for the Hubbard Steel Foundry Co., East Chicago, Ind.

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W. J. Wooldridge, manager of the electrical sheet department, Empire Steel Corp., Mansfield, O., has resigned to assume a similar position with the Allegheny Steel Co., Brackenridge, Pa.

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Charles C. Steel, for over 20 years in charge of sales engineering for Sweet's Steel Co., Williamsport, Pa., has resigned to become manager of sales of concrete reinforcing bars for the Harrisburg Pipe & Pipe Bending Co., with offices on Herr near Tenth street, Harrisburg, Pa. He will be in charge also of eastern district sales for the West Virginia Rail Co., Huntington, W. Va.

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Charles J. Hogan is now affiliated with the Philadelphia office of Charles Driefus & Co., Widener building, dealers in scrap and other raw materials. Mr. Hogan, associated with the scrap trade for 25 years, will operate chiefly in the New York metropolitan district.

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Percy W. Fenner, representative in the Cleveland district for the Latrobe Electric Steel Co., Latrobe, Pa., and previously Wm. Jessop & Sons Ltd., Sheffield, England, is now associated with the Firth-Sterling Steel Co., in Cleveland.

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Wayne H. Perry, attached to the office of J. W. Lewis, asistant to Gerard Swope, president General Electric Co., Schenectady, N. Y., has been elected an assistant secretary of the company, with offices in the new General Electric building, 570 Lexington avenue, New York.

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C. D. Peterson, factory engineer, Fisher Governor Co., Marshalltown, Iowa, has been transferred to Tulsa, Okla., where he will cover adjacent oil territory as field engineer.

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Walter W. Trout, formerly in charge of the Tulsa, Okla., office of Lufkin Foundry & Machine Co., Lufkin, Tex., has been appointed assistant to President W. C. Trout at Lufkin. He is succeeded at Tulsa by D. A. Reid.

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George W. Walton, formerly sales representative at Tulsa, Okla., has been appointed sales manager, Emsco Derrick & Equipment Co., Los Angeles, D & B Pump & Supply division, with headquarters at Dallas.

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M. B. Barbe has been made district representative for northern Ohio, with headquarters in Warren, O., for the Bantam Ball Bearing Co., South Bend, Ind. Mr. Barbe has spent the past six years in sales and engineering work in connection with antifriction bearing applications.

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E. Akridge recently has been made a sales engineer in the Chicago district for Foote Bros. Gear and Machine Co., Chicago. He has been in the order department of the company for five years.

George E. Popelar, formerly with Hildebrand Engineering Co., Chicago, and Industrial Engineering Co., New York, also has been appointed sales engineer for the Foote company.

EDITORIAL

The Road Back to Public Esteem for Industry

PROPOSAL by Gerard Swope of a specific plan for the self-government of industry revives the old question of whether business can police its own precincts or whether the federal government must do the job.

It is to be hoped that business executives will consider the question more seriously this time than they did on previous occasions. Time and time again since the World war competent authorities have urged business to put its house in order and have warned that failure to do so would expose business to government regulation. Mr. Swope had this in mind two years ago, when on Sept. 16, 1931, he proposed a plan for enabling industry to curb abuses within its own house.

It is unfair to say that these warnings went unheeded. On the contrary, many able executives in every line of industry recognized the danger and were anxious to avoid it. However, the existing machinery was incapable of transforming the good intentions of the majority into effective action. Of the hundreds of trade associations in the country, only a few were sufficiently representative or strong to make more than a perfunctory effort at cleaning house in the industries which they served. Moreover, the anti-trust laws prevented direct action, with the result that the only weapon available to industry was moral suasion—a force which has proved to be hopelessly ineffective.

Because of Sins of a Minority, All Business Has Been Target for Vilification

Consequently, when the crisis of the depression brought forth the so-called "new deal," industry appeared before the new administration as a defenseless target for criticism. Disclosures of dishonest practices in finance, public utilities and other fields gave business generally a black eye in the public mind. The undiscerning man in the street did not take the trouble to distinguish between the good and the bad. To him any big unit or group in finance, commerce or industry was open to suspicion. He howled with glee everytime the lash of the administration's whip struck the quivering hide of "big business."

What was more natural than that the administration should "play up" to this popular approval of the bullyragging of business? It has done so—sometimes with what seemed to be unnecessary vigor. One of the unfortunate results is that industry's case has not been presented to the public fairly. The mistakes of industry have been magnified; its achievements have been discounted or ignored; and its attitude throughout the past few months has been grossly distorted. Another regrettable result is that the President's avowed plan of "co-operation" frequently has swerved dangerously close to coercion and oppression.

These and other disturbing tendencies which have cropped out in the brief life of NRA, PWA, AAA, etc., are forerunners of the dangers which would attend any permanent plan of government control of industry. It would be impossible, in the long run, to keep out the demoralizing influences of petty politics and top-heavy bureaucracy.

To Avoid Federal Control or Cut-Throat Competition, Industry Must Rule Self

It is unthinkable that this country should permit regimentation of industry by the federal government except as a last resort if the nation were in the last stages of collapse. Equally unthinkable is the prospect of going all the way back to undisciplined, cut-throat competition. The safe path lies somewhere between the two. It is the course outlined in the plan proposed by Mr. Swope.

Although the best vehicle may prove to be somewhat different from the super-trade-association idea he has pictured, industry must keep its house in order if it is to stave off regimentation by the government. The task ought to be somewhat easier today than it was in 1931. NRA, in spite of its obvious shortcomings, has given industry valuable assistance in strengthening its trade associations. In the existing "code authorities," most of the important industries now possess leadership and authority sufficient to execute remedial measures which could not have been put through under moral suasion.

If NRA should fall short in other respects, it must be credited with placing the problem of self-government squarely up to industry. On behalf of industry, Mr. Swope has accepted the challenge. He and his eminent associates on Secretary Roper's advisory board see the problem clearly. They deserve the unstinted support of every industrial executive in perfecting a plan which will permit industry to work out its own destiny. Only by demonstrating its ability to govern itself can industry hope to curb the present flow of unjustified vilification and regain its proper place in public esteem.

THE BUSINESS TREND

Trend Still Downward, But Sentiment Is Improving

WHILE practically every important barometer of business is tending downward, sentiment is manifesting a slightly improved tone. This may seem to be paradoxical, but it is easily explained.

Back in August, when the tremendous spurt in activity of late spring and early summer began to slacken, there was considerable doubt as to the real cause of the relapse. Optimists said it was the normal dullness of "dog days"—a breathing spell before the fall pick-up. Others, more discerning, believed it was the inevitable reaction from a too rapid rise. The majority felt that its chief immediate result would be a delay of from several weeks to perhaps two months in the expected fall upturn.

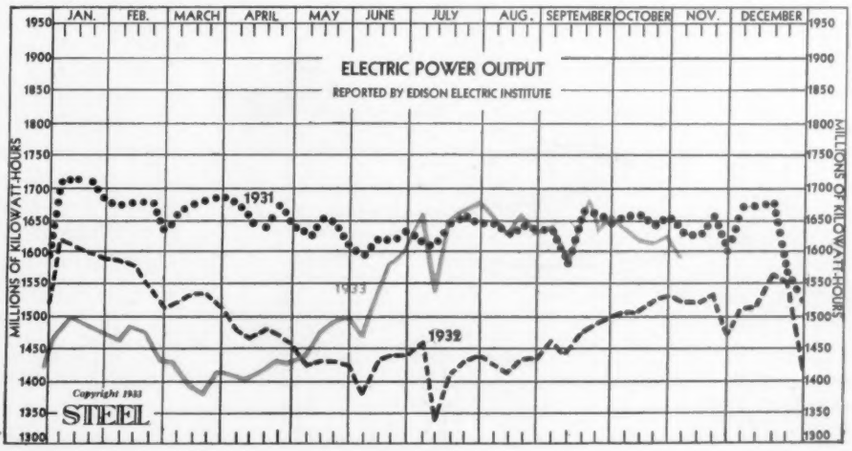
September witnessed an accelerated decline in industrial activity. October came and went, and still no signs of abatement in the recession appeared. Today we are well into the month of November, and, according to the available records, the downward trend continues. At this late date, can we still expect a belated fall upturn before the year-end, or must we await the new year for tangible signs of marked improvement?

A categorial answer cannot be made because so much depends upon the whim of government policy, which at the best is uncertain. Nevertheless encouragement can be found in a number of current developments.

Intangibles Point To Greater Resistance To Decline and Early Reversal of Trend

For instance, the precipitate drop in steelworks operations is leveling off. The decline last week was moderate compared with the losses of previous weeks. More significant, however, is the intangible feeling, which exists in many branches of industry, that more business is available. Salesmen are more active. Inquiries are in greater volume. Orders for equipment and materials in the last week have been more numerous, although of modest proportions. Almost everywhere one goes, one finds an attitude that "there is more business to be had."

This is the basis for the improved tone in sentiment. The statistics, which reveal the course of past events, point downward, but that indefinable quality — business sentiment — which is based upon expectancy, is definitely more buoyant.

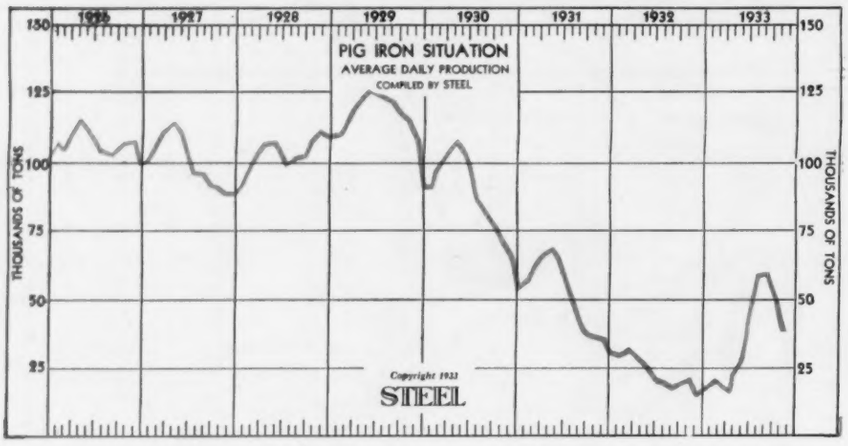


1933

Million Kw.—Hr.	
Nov. 4	1,582
Oct. 28	1,622
Oct. 21	1,619
Oct. 14	1,619

1932

Million Kw.—Hr.	
Nov. 5	1,525
Oct. 29	1,553
Oct. 22	1,528
Oct. 15	1,508



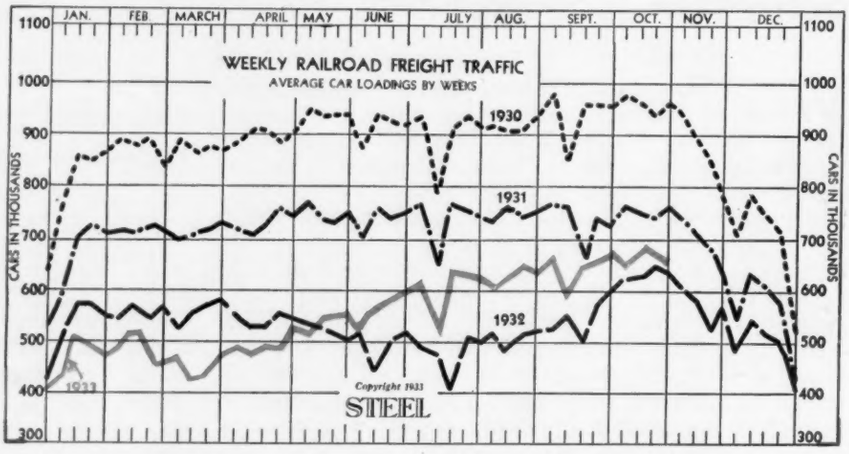
October, 1933	43,699
September, 1933	50,264
October, 1932	20,795

Pig Iron Production Down 13 Per Cent in October

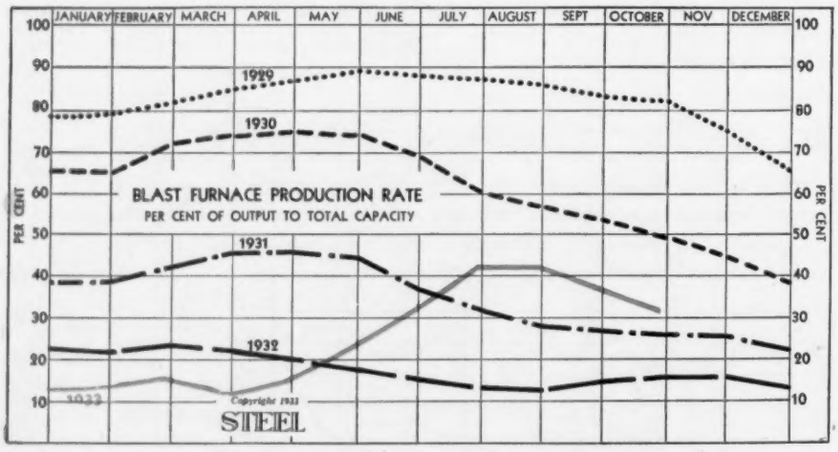
Production of coke pig iron in the United States declined sharply in October, bringing the daily rate down to the lowest since June. The daily rate in October was 43,699 gross tons, which compared with the 50,264-ton rate of September, was a loss of 6565 tons, or 13.1 per cent. The October rate was the lowest since last June with 42,165 tons, but was more than double the 20,795-ton rate established in October one year ago.

Freight Car Loadings Continue Downward

Revenue freight car loadings for the week ending Oct. 28 totaled 636,674 cars, according to the report of the American Railway association. This was a decrease of 13,808 cars below the preceding week, but 19,390 cars above the movement in the corresponding week of 1932. The decrease from the preceding week was 2.1 per cent and was greater than the usual seasonal drop registered at this time of the year. However, colder weather may result in a stimulating effect upon coal shipments over the near term.



	1933	1932
Oct. 28	636,674	617,284
Oct. 21	650,482	641,985
Oct. 14	664,058	649,690



	Per Cent
October, 1933	31.7
September, 1933	36.4
October, 1932	14.7

Blast Furnace Rate Down As 9 Furnaces Are Dropped

With the total output of pig iron showing a decline of 153,235 tons in October, nine more blast furnaces were dropped. This lowers the total of 89 furnaces active on Sept. 30 to 80 on the last day of October. Relating production to capacity, operations in the month just closed were 31.7 per cent, as compared with 36.4 per cent in September and 42.8 per cent in August. The operating rate for October a year ago was 14.7 per cent.

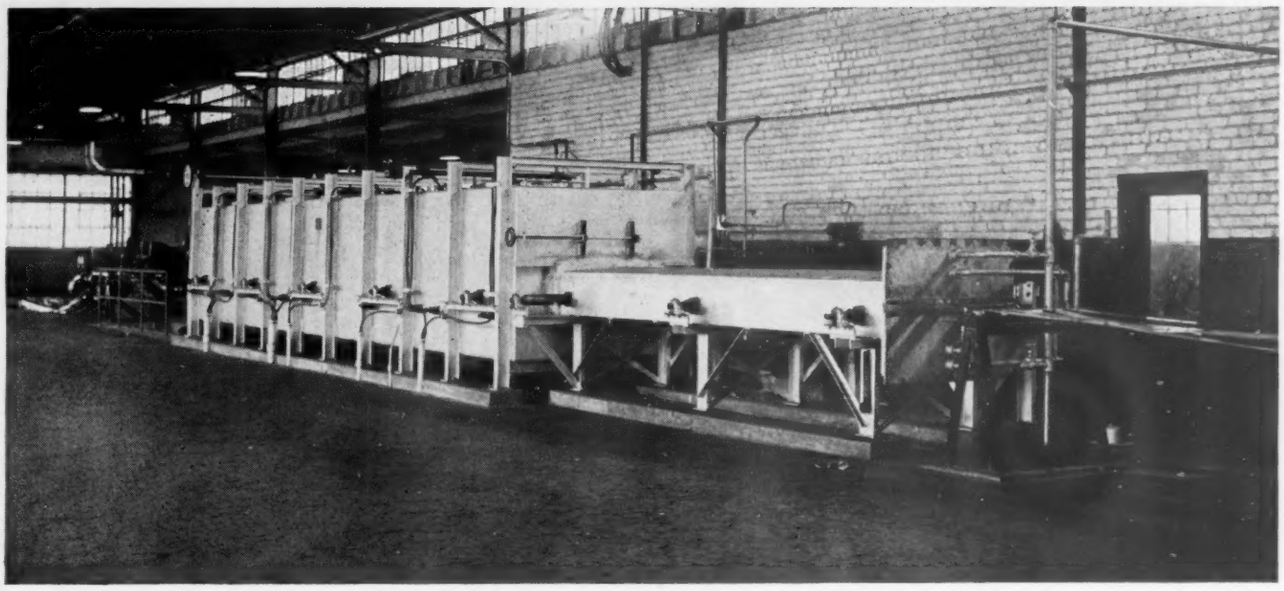


Fig. 1—Continuous electric furnace for annealing silicon steel strip from 0.012 to 0.031-inch thick and in widths up to 36 inches. Operating temperatures are from 1500 to 1900 degrees Fahr. After passing through the protected atmosphere heating chamber at the left, the strip travels through cooling zone at right and then cools further in the air before being coiled

SILICON STEEL STRIP IS ANNEALED IN CONTINUOUS ELECTRIC FURNACE

AN ELECTRIC furnace for annealing silicon steel strip continuously recently was placed in operation in one of the plants of a large Ohio steelmaker. This furnace embodies several interesting features, among which are a protective atmosphere to prevent oxidation of the strip and a unique control arrangement for drawing the strip through the furnace and for coiling it after annealing.

This furnace, installed by the Republic Steel Corp. in its plant in Warren, O., was designed to anneal strips of silicon steel in thicknesses ranging from 0.012 to 0.031 inch and widths up to 36 inches at temperatures of 1500 to 1900 degrees Fahr.

The furnace, shown in Figs. 1 and 2, consists of a horizontal heating chamber, 32 feet long and 44 inches wide, having a cooling chamber continuous with it, and a roll table consisting of heat-resisting rolls extending the entire length of both the heating chamber and cooling chamber, the rolls being spaced approximately 7½ feet apart, forming moving supports for the strip. The rolls are driven by a standard roller chain extending the entire length of the furnace, engaging with a sprocket mounted on one end of each roll, and being driven by an adjustable-speed motor through a suitable speed reducing unit located at the discharge end.

Speed of travel of the strip is adjustable over a range of from 7 to 28 feet per minute, for the thick strip and thin strip, respectively, the product being coiled by suitable reels as it comes from the furnace. The reels, however, are located at some distance from the furnace to permit the strip to cool further by traveling in the open room.

The furnace was designed for an output of 2000 pounds of strip per hour at 1900 degrees Fahr., with provision for extending it later to give an output of 3000 pounds per hour. It is divided into five control sections of approximately equal length along the furnace and has an electrical rating of 400 kilowatts, 220 volts, 3 phase. This rating is higher than would be required for 2000 pounds per hour output, but the incoming zones were powered for the ultimate requirements of 3000 pounds per hour, when the furnace is extended.

The necessary protective atmosphere is supplied by a combustion-type producer utilizing natural gas, the gas being burned under controlled conditions in the apparatus to yield a gas with normal content of approximately 6 per cent each of hy-

BY A. N. OTIS

Industrial Engineering Department,
General Electric Co.

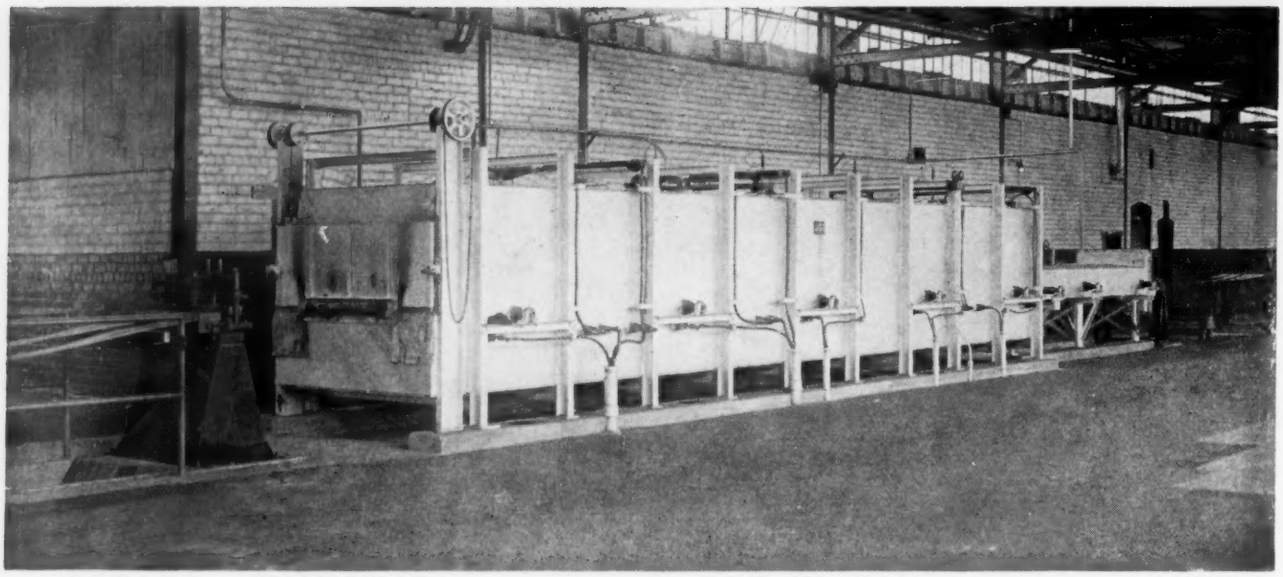


Fig. 2—Silicon strip taken from loose coils enters the furnace from the left and is pulled through by a set of pinch rolls at the discharge end. In the furnace, the strip is supported on a series of chain-driven rolls rotating at the same speed as the pinch rolls. Present capacity is 2000 pounds per hour, although this can be increased to 3000 pounds by extending furnace

drogen, carbon monoxide and carbon dioxide, with the balance nitrogen. Approximately 1000 cubic feet of gas per hour is required for the furnace and this is obtained from about 150 cubic feet of natural gas. The atmosphere producing equipment, as it appeared in the factory before shipment, is shown in Fig. 4.

A motor-driven pinch roll located beyond the discharge end of the furnace draws the strip from loose coils through the heating and cooling chambers. The pinch roll motor and the roll table motor are provided with a speed-matching control, consisting of two selsyn generators, one geared to each of the motors. The two selsyn generators are connected electrically to a differential selsyn indicator mounted on the control board which indicates when the peripheral speeds of the pinch roll and the table rolls are exactly matched.

How Matching Is Accomplished

The roll table motor is provided with an electric tachometer generator, calibrated with an instrument mounted on the control board and having its scale graduated in feet per minute. Multiple rheostats, mounted on the same shaft and connected in the fields of the motors, make it possible to adjust the speed of both motors simultaneously over the entire range of from 7 to 28 feet per minute, a separate vernier rheostat being provided for exact speed matching and to make up for slight differences in the speeds due to temperature or other factors.

With this thin strip at high temperature, it would not be permissible to apply appreciable tension, due to liability of elongation or breakage, and it is therefore necesary that the peripheral speeds of the furnace rolls and the pinch rolls should be matched accurately at all times. To

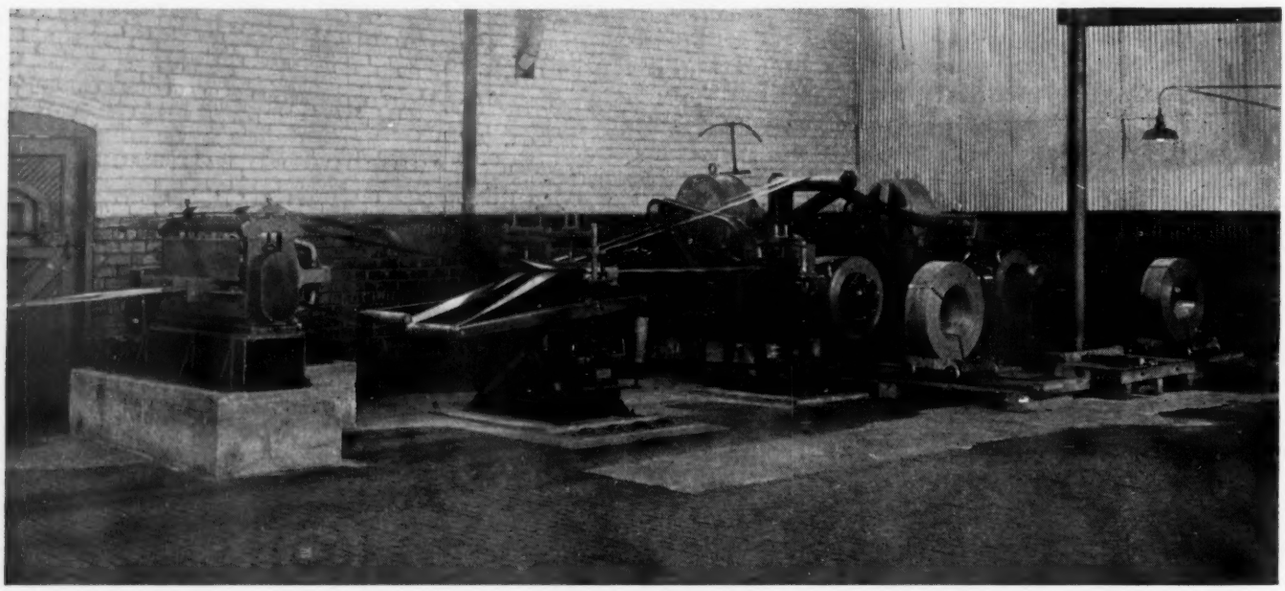


Fig. 3—The pinch rolls for pulling the strip through the furnace are shown at the left. Two coiling machines with collapsible reels and driven by adjustable-speed motors are shown at the right. Between the pinch rolls and coiling machines is a loop device which controls the speed of the reels as the coils build up and prevents appreciable tension being applied to the strip

set the speed at any desired value, it is necessary only to turn the dual rheostat handle until the tachometer indicates the desired speed, then adjust the vernier rheostat for exact speed matching, as shown by the selsyn indicator.

The coiling mechanism, shown in Fig. 3, consists of two motor-driven collapsible reels, both of which are in line with the furnace, and either of which will take strip 36 inches wide. In normal operation, however, two or more narrow strips rather than a single wide strip, would be coming through. The illustration shows four narrow strips being coiled.

The reels are driven by adjustable-speed motors, and a unique arrangement has been provided for controlling the speed of the motors as the coils built up on the reels. The object of the arrangement is to prevent appreciable tension being applied to the strip. Since tension is to be avoided, it is not possible to use the usual tension control apparatus.

Two idler rolls are provided just ahead of the reels, the strip being supported between the rolls in the form of a catenary. Two balanced beams, each having a light contact roll, extending across one-half the width, were provided so as to control independently the height of the loop or catenary for each of two strips, or one of them could be used for a single wide strip. The loop control device is illustrated clearly in Fig. 3.

No Tension Is Applied

A motor-operated rheostat is provided for the field of each of the reel motors, these rheostats being actuated by contacts on the balanced beams. Thus, when the catenary or loop tends to rise, the speed of the reel motor will be reduced, or if the loop falls, the motor speed will be increased. A slight over-balance, of course, is carried on the beams to keep the controlling roll in contact with the strip. This arrangement controls the position of the strip or height of the loop within very close limits, and applies no tension. The tension necessary for smooth laying of the turns is secured by friction clamps.

The tendency, of course, is for the loop to rise continuously, due to the increasing diameter of the coil, and the principal function of the control is to reduce the speed of the reel motors gradually as the coils build up. These floating rolls provide a very close and uniform control of the motors, and the arrangement is fully automatic for any thickness of strip, speed of travel or rate of build-up of the coils.

The complete installation, including the furnace, atmosphere producer, control boards, speed matching control, and loop control, were supplied by General Electric Co., Schenectady, N. Y. The temperature control instruments were supplied by Leeds & Northrup Co., Philadelphia, and the reels by Aetna-Standard Engineering Co., Pittsburgh.

All of the control equipment, including the instruments, is mounted on suitable panels in a separate room, the switches for starting the motors and other disconnects being mounted back of the panels with handles on the front, making dead-front construction. The entire equipment presents an exceedingly neat appearance and operates with remarkable smoothness, and lack of noise.

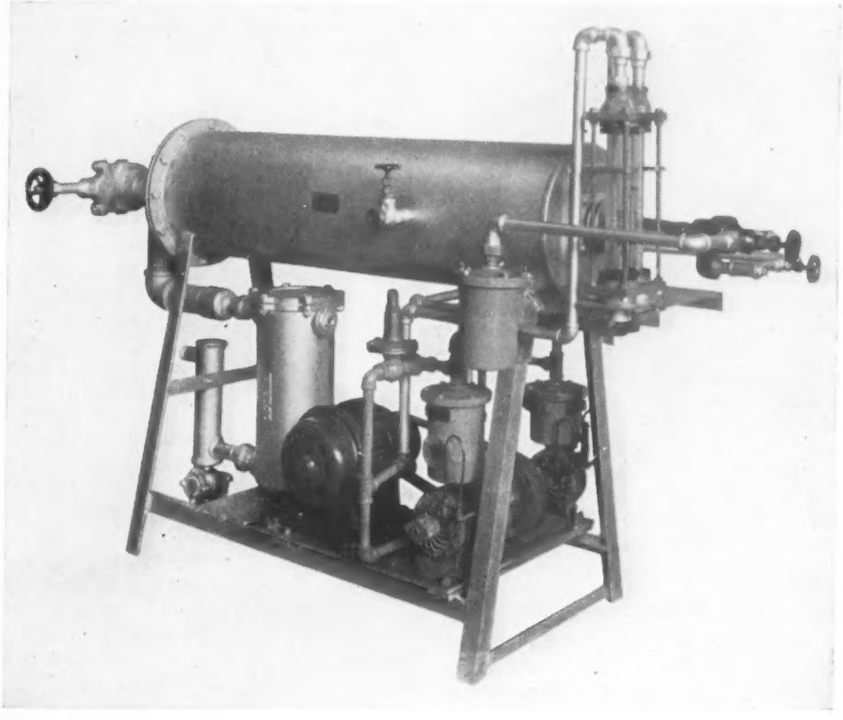


Fig. 4—The protective gas atmosphere used in the furnace to prevent oxidation is supplied by this combustion-type producer burning natural gas. Normal content of the gas is 6 per cent hydrogen, 6 per cent carbon monoxide, 6 per cent carbon dioxide and 82 per cent nitrogen. About 1000 cubic feet of gas per hour is obtained from 150 feet of natural gas

A.S.T.M. Will Occupy New Offices in Philadelphia

Headquarters of the American Society for Testing Materials, which for the past 14 years have been maintained in the Philadelphia Engineers' Club building, 1315 Spruce street, Philadelphia, will be moved to the Atlantic building, 260 South Broad street, of the same city, at the end of this year.

In the new location, total floor area will be increased about 40 per cent and general office space nearly 60 per cent. Greatly improved facilities for meetings of administrative committees will be available. While not spacious, the new rooms will be suited excellently to needs of the society at present and for some little time in the future.

Blast Furnace and Coke Oven Practice Up for Discussion

Preparation of merchant iron, and carbon in pig iron with particular relation to ingot mold practice; rehabilitation of cold by-product coke ovens; and latest developments in preparation and use of mixed blast furnace and coke oven gases are subjects to be discussed at roundtable sessions of the annual fall meeting of the Eastern States Blast Furnace and Coke Oven association, Nov. 17, at the William Penn hotel, Pittsburgh.

First of these subjects will be considered at a blast-furnace roundtable at 1:15 p.m., while simultaneously the second topic will be discussed at a coke-oven roundtable. The third subject will be commented upon at a joint roundtable meeting at 3:30 p.m. Further information on the meeting may be obtained from J. C. Murray, assistant general superintendent, northside division, Jones & Laughlin Steel Corp., Pittsburgh, secretary-treasurer of the association.

Heating Galvanizing Kettles By Diffusion Combustion

BY H. M. HEYN

Engineer, Surface Combustion Corp.

ROUGHLY speaking, a galvanizing furnace consists of a pot and a brick setting built up according to the fuel used. The fuels may be wood, coal, coke, oil, gas, or electricity. As industry and processes have advanced, so have furnace design and fuel utilization. Wood and coal have been discarded practically, leaving only coke, oil, gas and electricity as competitors in the fuel field.

Of all these fuels, coke has been the old reliable and still is being used to a large extent in hot galvanizing furnaces; however, oil, gas and electricity are replacing it rapidly. Coke requires extra labor in firing, requires grated construction of combustion chambers, causes hot spots, and is not adapted to automatic control—the latter, of course, is very important in hot galvanizing. Coke has not proved sufficiently pliable for present-day requirements, consequently in many cases is being replaced by gas.

Fire on Refractory Bed

Kettles heated by gas have been fired by means of clear-flame combustion burners firing onto a refractory bed along each side of the kettle. These burners are fed by a properly mixed volume of air and gas supplied through an automatic proportioning inspirator of either high or low-pressure type, using city, natural, or butane-air mixture. This system has met with the favor of manufacturers because of its flexibility, ease of temperature control, and cleanliness.

Recently, a new system of firing, constituting a radical departure from the old and offering numerous advantages, was perfected by the Surface Combustion Corp., Toledo, O. The new system utilizes the advantages of luminous flame combustion by the application of diffusion burners. This method of firing can be explained best by describing an actual installation.

The pot measures 8 feet in length 2½ feet in width and 3 feet 4 inches in depth and is enclosed by a setting 10 feet 4 inches long, 6 feet 11 inches wide and 4½ feet deep. The setting is in a pit so that only 2 feet 2 inches of structure is above floor level and the entire setting is enclosed by a 4-inch red brick wall suitably braced by steel brickstaves. Inside the red brick wall is 2½ inches of insulating brick and 4½ inches of firebrick. The top covering consists of 6 x 12 x 20 inch tile along each side of the pot, bridging from the top of the sidewalls over to the pot, over which are ⅜-inch steel plates covering the brickwork all around the pot.

Burners at Two Corners

The pot is fired by two 6 x 8 inch diffusion burners placed at diagonally opposite corners, the center line of each burner being 11 inches below the top of the pot. These burners fire in opposite directions along the sides of the pots, firing into ducts measuring 9¼ x 10 inches. The products of combustion travel through this first duct then reverse direction and return to the burner end when they reverse again and pass on out the flue.

This type of firing has the advantage of placing the maximum amount of heat at the uppermost part of the pot where heat losses are greatest because of surface radiation of the bath. Also, due to the design of the burner, the combustion takes place slowly and softly, eliminating hot spots, and has the added advantage of obtaining the most heat out of the gases on account of three passes through ducts, the gases from each burner traveling 24 feet before going out the flue. Furthermore, due to luminous flame combustion, the rate of heat transfer through the pot is much more rapid than can be obtained with clear flame combustion, which means greater output on a pot of equivalent size, without pot damage because of high temperature differential between the outside and inside of the pot.

Construction Simplified

From a construction standpoint, the setting is greatly simplified as to pipework and brickwork. This simplicity is shown clearly in the accompanying illustration. With clear flame burners practically all pipework and controls are under the floor level, thus making them a little more difficult to get at in case of trouble. With the diffusion burners, there are only two connections per burner or four connections for the job described.

Each main burner is equipped with a pilot burner which serves two purposes, that of lighting the main burner on off-and-on control, and the purpose of holding the burner during the night. The pot is operated at temperature of 890 degrees Fahr. during the day, but during holding periods it drops to 880 degrees. This temperature is held by the two pilot burners unless they are cut down somewhat. The operator usually sets the pilot burners at a rate of 140 cubic feet of 1000 B.t.u. gas per hour to hold at 800 degrees Fahr. The main gas supply is turned off entirely during holding periods.

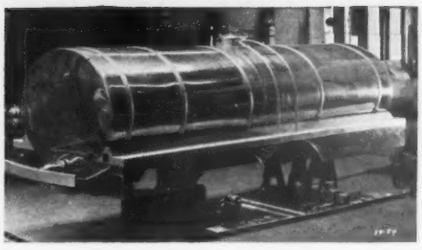
The installation just described re-

Two diffusion combustion gas burners, one on either side and firing in opposite directions, are used to heat this galvanizing kettle. The burners are placed 11 inches below the top of the pot to provide heat at the point where radiation losses are greatest. Temperature control is automatic

placed a coke-fired installation in the plant of a manufacturer of pole line hardware. The amount of dross formed has been one-third of that by coke firing, the rate of heat transfer into kettle has been increased, fuel per hour is less, kettle life is longer, and overall cost per ton of work produced has been materially decreased with an increase in quality. These advantages are attributed to the diffusion combustion principle of firing.

Milk Tanks of 18-8 Clad Steel

TWO stainless clad steel milk truck tanks, each of 3000-gallon capacity, recently have been placed in service by the Queensborough Dairy Co., Long Island City, N. Y. Claimed to be the largest milk truck tanks ever constructed, they are used to haul milk daily from Syracuse, N. Y., to the metropolitan area—a distance of 400 miles. The tanks were designed and fabricated by the Alloy Products Corp., Waukesha, Wis., and embody a number



of advanced engineering features.

The interior of the tanks is constructed of stainless clad steel, furnished by the Ingersoll Steel & Disc Co., a division of Borg-Warner Corp., Chicago. Stainless clad steel sheets are used having a 20 per cent thickness of 18-8 chrome-nickel stainless steel, bonded to mild steel, as regularly produced under the Ingersoll patented process. The material thus assures freedom from corrosion or rust on the interior of the tank.

The tanks are made by butt welding large plates of stainless clad steel into a one-piece oval cylinder. It is the practice of the fabricator, to use a 25-12 stainless steel welding rod for all butt welds, since it assures an absence of carbide precipitation, and a weld that has even greater corrosion resistance than the stainless surface of the material. The ridges left by welding are buffed down with high speed grinders so that, after polishing, the interior of the tank presents a perfectly smooth surface. Ends of the tanks similarly are welded to the side walls, a long radius bend being employed at the junction of ends to side walls to facilitate cleaning and assure complete sanitation.

Insulation Protects Contents

The tanks are 60 inches high x 78 inches wide x 227 inches long overall. Each tank has a 17-inch manhole and cover, 3-inch outlets and valve, 2-inches of composition insulation covered with 16-gage polished aluminum sheeting with all seams welded. The units are provided with checker plate runboards and understructure, and are mounted on six-wheel Brockway motor trucks. On future designs it is planned to use stainless clad steel for the exterior sheeting as well.

Tests made on an 8-hour run with outdoor temperature at 85 degrees and milk temperature at 40 degrees at the start showed a temperature rise of less than one degree at the end of the trip.

Welded Pipe Line in California Carries Water Under Water

TO CARRY water under water is the purpose of this steel pipe line, shown in the illustration above as it rested during construction on the bottom of Hollywood reservoir in Hollywood, Calif.

When the Los Angeles department of water and power decided to build a second dam above the present Mullholland dam, it was necessary to lay a pipe line from the bottom of the new reservoir, through the dam, along the bed of the first reservoir and down through the canyon where it would connect with the city mains. This pipe line, 45 inches in diameter and 3460 feet in length, and one of the largest diameter entirely arc welded water lines in existence, was submerged under 50 feet of water when the project was completed.

Down and under went the welding operator at work on the line, as shown in the illustration at the right. Bell and spigot joints were employed, these being welded with the shielded arc, using electrodes and welding equipment manufactured by the Lincoln Electric Co., Cleveland.

The Plastic Forming Of Metals

By PROFESSOR DR.-ING. ERICH SIEBEL
Translated by JOHN H. HITCHCOCK

Part I—Laws and Fundamentals of Plastic Forming

4. Work of Deformation

IN CALCULATING the energy consumed during the forming of a body the first case considered is that of a rectangular parallelopiped having edge dimensions h, l, and b, which is compressed without loss of energy when its faces lie normal to the principal stress directions as in Fig. 16. Because no sort of lateral forces are exerted upon the parallelopiped under consideration, no changes of angle are produced during the deformation. The principal stress directions and the principal deformation directions accordingly coincide. After an infinitely small compression $-dh$, the paralleopiped has the dimensions $h-dh$, $l+dl$, and $b+db$; from which, using the condition of constant volume,

$$l\times b\times dh = b\times h\times dl + h\times l\times db \quad (11).$$

Since the stresses have no effect at the lateral faces, $\sigma_3=\sigma_2=0$; and according to equation (1) the effective stress in the plastic region on the upper and lower faces of the parallelopiped, is $\sigma_s=-k_f$. The force necessary to produce the deformation on a compressed area $F=l\times b$ is given by:

$$P=l\times b\times(-k_f)=-F\times k_f \quad ....(12),$$

and the work of deformation is:

$$dA=P\times(-dh)=l\times b\times dh\times k_f \quad (13).$$

Multiplying and dividing the right-hand side of the latter equation by $V=l\times b\times h$, the final result becomes:

$$dA=V\times k_f\times\frac{dh}{h} \quad .....(14).$$

If the stresses on the lateral faces are not equal to zero, but are equally great, the relations change to the extent that the stress σ_2 acting upon the upper and lower faces becomes:

$$\sigma_s=\sigma_1-k_f=\sigma_2-k_f$$

In compression, work then is performed on all the faces, because displacement occurs everywhere in the directions of the forces. The work of deformation in this case is:

$$dA=b\times h\times dl\times\sigma_1+h\times l\times db\times\sigma_2-b\times l\times dh\times\sigma_3$$

In consideration of equation (11), and of the relations between the three principal stresses, which are determined by means of the condition of plasticity, the same expression for the work of deformation is obtained in this case:

$$dA=V\times k_f\times\frac{dh}{h}.$$

This equation is valid for a deformation with plane flow of material. In this case, the relation $\sigma_1-\sigma_2=k_f$ again exists between the two outer principal stresses. The intermediate principal stress now differs from σ_1 and σ_2. In the direction of this stress no displacement occurs, and no work is performed by the forces exerted in this direction. The condition for the work of deformation is accordingly:

$$dA=b\times h\times dl\times\sigma_1-l\times b\times dh\times\sigma_3;$$

and because $b\times h\times dl=l\times b\times dh$ (constant volume),

$$dA=b\times h\times dl\times(\sigma_1-\sigma_3)=b\times h\times dl$$

$$\times k_f=V\times k_f\times\frac{dl}{l}=V\times k_f\times\frac{dh}{h}.$$

If a stretching of the body in question, by the application of tensile stresses, is investigated instead of a compression, only the signs of the stresses and deformation change, and the conditions derived for the work of deformation are valid in this case also.

If, instead of an infinitely small deformation we consider a finite compression of the rectangular parallelopiped from the height h_0 to the height

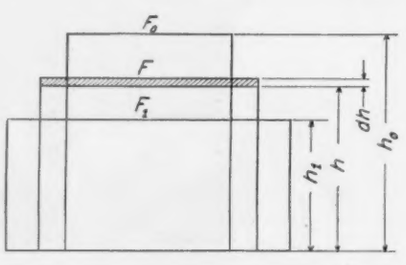


Fig. 16—Compression of a rectangular parallelopiped

h_1, we have for the pure work of deformation, according to equation (14) the integral:

$$A_{1d}=\int_{h_1}^{h_0}dA=V\int_{h_1}^{h_0}k_f\times\frac{dh}{h} \quad (15).$$

Taking into consideration the fact that $\frac{dh}{h}$ represents the absolute value of the greatest principal deformation, equation (15) can be revised by the introduction of this generally valid quantity, and is given the form:

$$A_{1d}=\int_0^{\phi_h}k_f[d\phi_h] \quad .....(16).$$

If the deformation strength is assumed to remain constant during the entire forming process, which is approximately true in the case of hot-working, equation (15) can be integrated easily to produce the result:

$$A_{1d}=V\times[\phi_h]\times k_f \quad .....(17).$$

The pure work of deformation in hot working is thus equal to the product

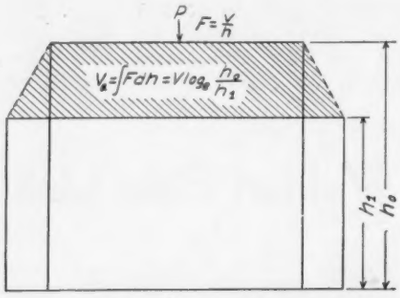


Fig. 17—Representation of volume displaced by compression

of the volume of the body, the absolute maximum principal deformation, and the deformation strength of the material. If the product $V\times[\phi_h]$ is designated as "displaced volume $=V_d$", equation (16) assumes the form:

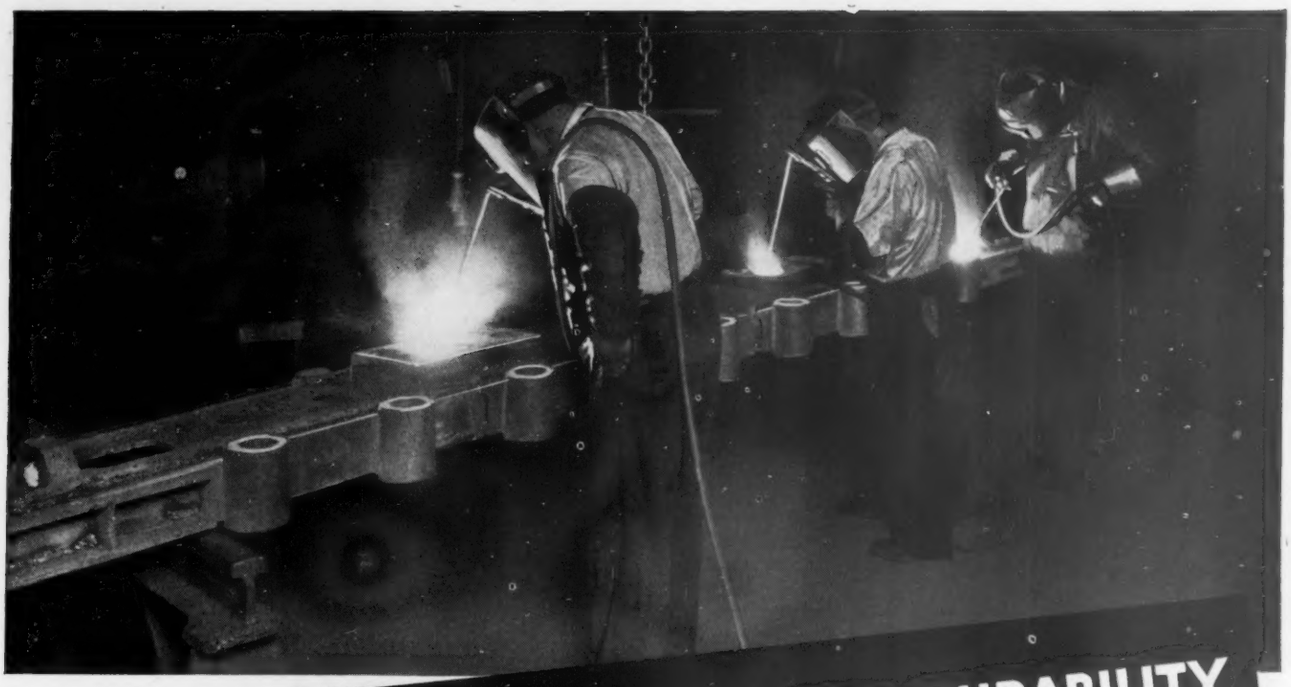
$$A_{1d}=V_d\times k_f \quad .....(18).$$

The displaced volume thus indicates the work of deformation per unit of deformation strength. This quantity, first used by E. Kirchberg[39] for the calculation of energy in rolling, has been found useful for purely comparative calculations, or for cases in which the deformation strength of a material is unknown or is to be established later. The displaced volume for the compression process is illustrated in Fig. 17 as the integral

$$\int_{h_1}^{h_0}F\times dh.$$

In cold-forming, as was described previously, the deformation strength

[39]E. Kirchberg: Grundzuge der Walzenkalibrierung; F. W. Rufus, Dortmund, 1905.



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k_f is a function of the maximum principal deformation, and is represented in relation to this factor as a flow curve. The integral

$$\int_0^{\phi_h} k_f \times d\phi_h$$

is represented in Fig. 18 as the area enclosed by the flow curve, by the axis of abscissas, and by the perpendicular erected to the curve from the abscissa ϕ_h. The magnitude of this area accordingly represents the work of deformation, per unit of volume, for a deformation ϕ_h=. Preferably, the work of deformation, a, is determined from the flow curve for all deformations, and is plotted, in addition to the flow curve for each material, as a function of the deformation (compare Figs. 9 and 10). For the pure work of deformation in cold forming, the relation then is found:

$$A_{id} = V \times [a]_0^{\phi_h} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (19).$$

If the deformation is performed in many stages, as is usually the case in cold rolling, drawing, etc., the work of deformation for the first step is then $V \times [a]_0^{\phi_1}$, for the second step $V \times [a]_{\phi_1}^{\phi_2}$, etc. (Fig. 19). For cold forming, it frequently seems admissible to assume a linear increase of the deformation strength within each individual stage of the deformation. For the pure work of deformation in each stage of the process, the approximate equation then is obtained:

$$A_{id} = V \times [\phi_h] \times k_{f_m} \text{ (approx.)} \ldots (20).$$

In this equation, the average deformation strength k_{f_m} in the n-th stage of working is given as the arithmetical mean of the deformation strength before and after this deformation, or $k_{f_{mn}} = \frac{1}{2}(k_{f_{n-1}} + k_{f_n})$. Inasmuch as the strengthening of metals, observed from the first part of the flow curve, usually varies in direct proportion to the deformation, a close approximation is provided by the use of this equation.

If the deformation in various parts of a body is not the same, exact determination of the work of deformation requires that a determination be made for each separate element of the body, and that the individual values thus obtained be added. The relations frequently are made more complicated by the fact that the direction of deformation in the individual elements of the body varies during the forming, so that it is not possible to judge the real deformation and the work of deformation from the state of distortion of the body elements after deformation is complete. In the continuous forming processes, however, as already has been mentioned, it is possible in many cases to follow all stages

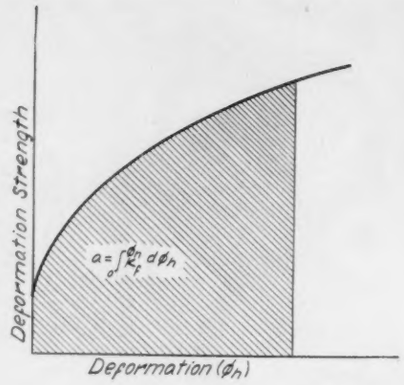

Fig. 18—Determination of specific work of deformation in cold forming

of the forming process experimentally. By means of a graphical integration of the deformation differential over the entire course of displacement, one can then determine the total deformation, as well as the displaced volume of each body element in its passage through the forming zone. Such an investigation, however, requires a great expenditure of work in experiment and computing. It usually is expedient, therefore, to follow the course of the technical forming processes by more simple methods, and to derive conclusions regarding the resulting requirements of force and energy by means of approximate calculations.

Heat Is Generated

The work consumed by deformation during cold working is converted into heat, except for small percentage which remains as latent energy in the strengthened material. For the temperature rise Δt which results from this transformation, the condition is:

$$\Delta t = \frac{\phi_h \times k_f}{W \times c \times \gamma} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (21).$$

In this equation, W represents the mechanical equivalent of heat, c the specific heat, and γ the density of the material. With k_f = 14,200 to 28,400 pounds per square inch, and c = 0.165 B.t.u. per pound per degree Fahr., and γ = 490 pounds per cubic foot, the temperature rise for iron at forging temperature, expressed in degrees Fahr., is found to be from 36 to 72 times ϕ_h*.

At lower temperatures, the temperature rise produced by forming can be many times greater. From the practical standpoint, it is significant to note that, because of the severe and sudden deformations which occur in the rolling of wire rod, or in the forging of small sections under high-speed hammers, an excessive temperature drop is prevented, or a temperature rise may even be obtained, in spite of the high radiation losses.

(To be Continued)

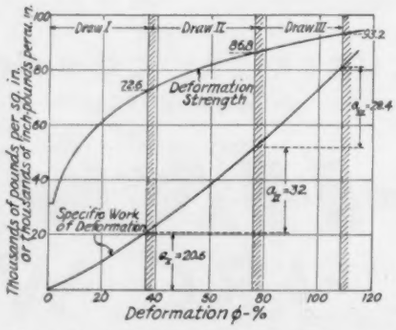

Fig. 19—Deformation strength and specific work of deformation in a drawing process

Dates of Future Meetings Announced by A. S. T. M.

American Society for Testing Materials announces that its 1934 regional meeting will be held in Washington, March 7, and its 1934 annual meeting at Chalfont-Haddon Hall, Atlantic City, N. J., June 25-29.

Selection of the hotel for the regional meeting has not been made. A feature of this meeting will be a symposium on corrosion to be sponsored by committees A-5 on corrosion of iron and steel and B-3 on corrosion of nonferrous metals and alloys. In connection with the regional meeting, the group meetings of A.S.T.M. committees will be conducted March 5-9. A number of committees have decided to hold their spring meetings at this time.

Several subjects of much current interest are under consideration for inclusion in the technical program for the annual meeting. It is probable that committee B-7 on light metals and allloys will sponsor the presentation of authentic data on the physical properties, service characteristics, corrosion-resistant properties, etc., of the several metals and alloys in the class of light metals. A symposium on new die casting alloys has been proposed.

Product Applications Listed

To acquaint engineers with the many and varied applications of its products, Demag A. G., Duisberg, Germany, has prepared, in English, a 200-page illustrated 6 x 8½-inch book which the company will send to interested parties. The book is divided into nine sections, each dealing with applications of the company's equipment in a particular industrial field.

*In metric units, k_f = 1000 – 2000 kilograms per square centimeter, c = 0.165 kilocalories per kilogram per degree Cent., and γ = 7.8 kilogram per cubic decimeter; so that the temperature rise for iron at forging temperature, expressed in degrees Cent., is from 20 to 40 times. ϕ_h.

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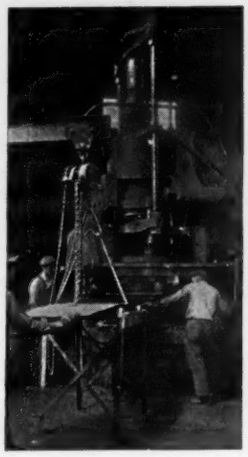
Making the Most of METHODS AND MATERIALS



IN MAKING aluminum or aluminum alloy castings in which brass, bronze or copper inserts, tubing or other pieces must be cast integral, serious difficulty sometimes is experienced with blowholes. These defects are caused by gas which forms when the aluminum strikes the insert. A West Coast aluminum foundry recently was unable to cast successfully a number of aluminum grids containing copper coils; these grids being part of a food product device. The problem finally was overcome completely by spraying the copper coils with a coat of aluminum before placing them in the mold, using the oxyacetylene spray gun to apply this coating.

$ $ $

Welders working on the repair of a rock crusher were instructed to save the babbitt bearings. Just above the bearing the cast-iron hopper was broken in two places, in the middle and across the end. These breaks were about 14 inches long each and varied from 2 to 3½ inches in thickness. The cracks were chipped out, the bearings packed around with wet asbestos, and the castings preheated with a kerosene torch to a black heat. The welder started and finished the bronze welding while his helper, using an extra blowpipe, assisted with local preheating in the vicinity of the welding, and also kept water flowing on the asbestos-covered bearings. The job was successful and the bearings unharmed.

$ $ $

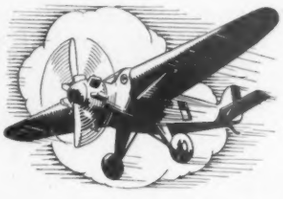
STEELS with nickel contents higher than 10 to 15 per cent and more than 20 per cent chromium have given excellent service in the hydrogenation of oils under high pressures and at elevated temperatures. The widespread interest in the hydrogenation of petroleum warrants mention that operating practice recently has reached a pressure of 3600 pounds per square inch and temperatures between 750 and 1100 degrees Fahr. It is safe to say that commercial operation under such severe conditions is dependent absolutely on the high chromium, high nickel steels having great strength at elevated temperatures and an adequate resistance to flame oxidation.

$ $ $

In a plant operating a large number of hydraulic presses ranging from 25 to 2000 tons capacity, four men were kept busy replacing worn stems and seats. The company adopted the practice of tipping the stems and seats with tungsten carbide, with the result that part-time service of only one man is required for this work.

$ $ $

In aviation, numerous control cables are required for the operation of airplanes. Constant inspection of these cables is demanded and where the planes operate in moist or tropical climates, or over water, corrosion is rapid. Several of large transport companies, as well as the United States navy, are adopting 18-8 stainless steel rope for this service.



$ $ $

Fuses, the weakest link in electrical distribution systems, in many cases are being replaced by gas-type circuit breakers which give fuseless protection with complete safety and maximum production. To enable industrial plants to know their fuse costs, an electrical equipment manufacturer has issued a fuse check book which makes it easy to obtain an accurate and permanent record of the waste which may occur when a fuse blows. By itemizing the facts over a short period, it is possible to evaluate lost time of men and machines. The man renewing the fuses fills in the number and sizes of the fuses, the number of men and machines made idle and the approximate lost time in minutes. With this information, the accounting department obtains the total cost of blown fuses, using average values for man-hour and machine-hour costs.

$ $ $

Recently it has been found advantageous to nitride forging dies, where a hard case over a tough interior grain structure increases the life of the die many times, as compared with ordinary heat treated dies.

$ $ $

BY JUDICIOUS use of nickel alloy steels, it is possible to prevent dangerous low-temperature embrittlement throughout the entire sub-zero range; the pearlitic nickel steels with 2 per cent or more nickel remain tough at least down to -100 degrees Fahr., while the austenitic nickel steels are available for still lower temperature service.

$ $ $

Diesel engine fuel pumps must be manufactured with a high degree of precision; to meet these requirements, the finishing of the bores of pump chambers, and of spray nozzles as well, has consisted mainly in a slow and painstaking lapping. With the advent of a new internal grinder of great accuracy and efficient cutting action, it was found that the parts could be ground to close limits at considerable savings in cost. Fuel pump parts have been ground having bores as small as 0.195 inch diameter and 2¼ inches long, requiring only 12 to 13 minutes to remove 0.004 inch of stock to a size tolerance of 0.0004 inch, while maintaining roundness and straightness within 0.0001 inch. Concentricity of bore with outside diameter may be maintained as close as 0.0001 inch total indicator reading when desired.

$ $ $

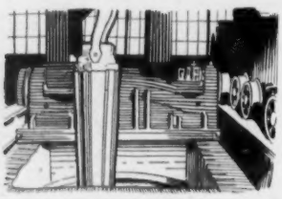
In the field of gages, chromium plating has been used more widely than for any other purpose. In the beginning, it was used largely as a means of salvaging gages that had been worn beyond their useful size. Today, however, nearly all gages are plated when made. The increased useful life of a chromium-plated gage seems to vary from 100 to 5000 per cent over that of a hardened tool steel gage. These gages, when worn, can be plated over and over again.

PROGRESS IN STEELMAKING

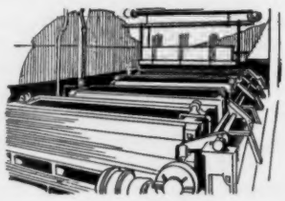
CONTINUOUS annealing of fine wire in an atmosphere of hydrogen is being accomplished by an eastern wiremaker, using a recently developed furnace built with a horizontal tube. A portion of this tube contains hydrogen gas under pressure and is housed in an electrically-heated compartment thermostatically controlled. The remaining section of the tube serves as a cooling zone. Wire coming from the cooling chamber has a clean bright surface free from all discolorations and spots. Advantages claimed for the new furnace are an improved quality of wire; and, that the annealed wire can be wound directly onto spools ready for the looms instead of winding the spools from coils, thus eliminating one operation. In addition to being annealed uniformly and rendered bright and clean, the wire is free from kinks and abrasion nicks which arise when extra handling is required.

♦ ♦ ♦

Corrosion of tar stills at by-product coke oven plants is abated to a large extent by spraying the surface of the steel with aluminum, according to tests recently conducted in Europe.



APPLICATION of crushed firebrick, fireclay and other refractory materials pneumatically when lining and repairing heating furnaces, ladles, soaking pits, open-hearth furnaces, cupolas and other steelworks equipment has been made possible by the development of a machine for this purpose. One model is motor driven and is equipped with remote control, thus enabling the unit to be charged by one man and to be started and stopped from remote position. Capacities of material range from 40 to 250 cubic feet an hour.



AN addition of a small quantity of ichthyol or ichthyol sulphate to the pickling bath will prevent the acid from attacking the metal being cleaned, according to a recent discovery.

♦ ♦ ♦

A new type of reinforcing bar has been evolved that will develop an unusually high bond stress, with a minimum amount of slip. The bar differs from existing types in that the deformations are small and so closely spaced that they might properly be called crenulations or scallops. Results show that at slips of 0.01-inch or less the crenulated bars develop stresses about 50 per cent higher than many types, and that they are less likely to split the concrete.

♦ ♦ ♦

About 600,000 B.t.u. per ton of steel poured is the fuel saving effected by insulating the roof of an open-hearth furnace to a depth of 2 inches. The practice at one plant is to reuse the insulation three or four times.

♦ ♦ ♦

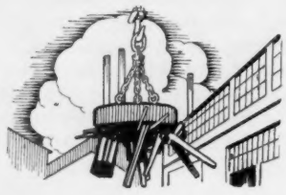
Continuous operation of bolt-heading machines is afforded at an Eastern plant by coupling a forging furnace to each heading unit. Rods in coil form are brought to the proper forging temperature in the furnace and then are fed into the machine which heads, shears and automatically ejects the bolts. Before the rod coil is used up, a fresh coil is joined thereto by welding, thus affording uninterrupted production.

♦ ♦ ♦

Drying the tallow and flour dope on seamless tubes to be cold drawn is accomplished at a plant in the Pittsburgh district in a continuous oven built below the floor level. The entire conveying mechanism slopes parallel to the floor of the oven to facilitate drainage of the tubes. Heated air is forced down through ducts to the bottom of the oven, and through cross ducts where it is discharged under the bundles of tubes and allowed to rise through and around the work. The new unit affords an improved quality of product economically, uninterrupted production, a reduction in handling costs and minimum maintenance charges.

♦ ♦ ♦

Soda ash added with the charge at steelworks cupolas accelerates the combustion reaction. This results because the soda ash makes a more fluid active slag which serves to keep the surface of the coke clear for better contact with the oxygen in the blast, and because sodium acts as a catalyst in hastening combustion.



CLEAN scrap charges afford the highest quality open-hearth steels and limestone gives better results than when burnt lime is used in the charge, according to a recent investigation. Heats made with burnt lime appear to be more subject to laminations than do heats fluxed with limestone, according to practice.

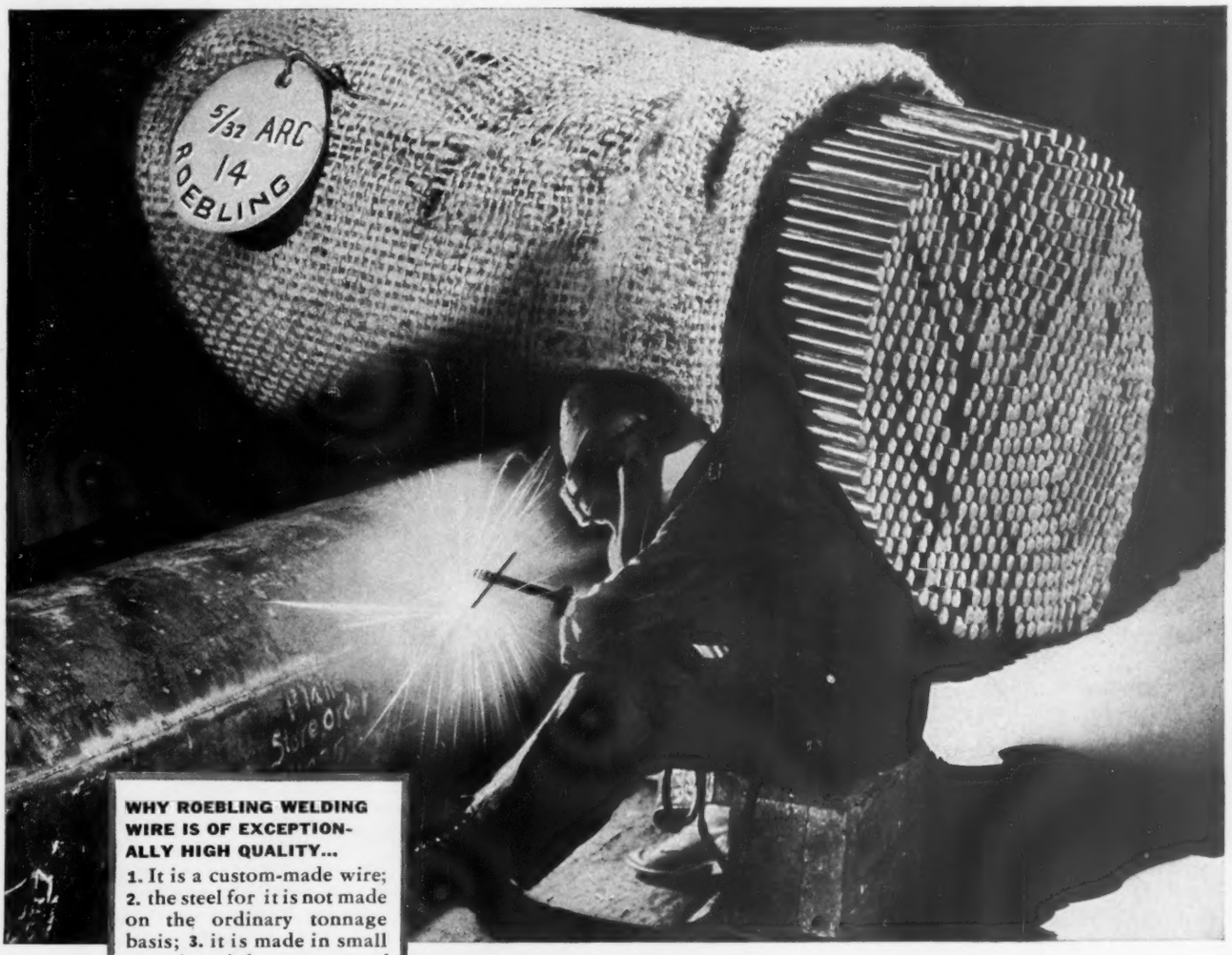
TO MAKE CERTAIN *of unvarying* WELD QUALITY

Many fabricating and maintenance jobs require welding of absolute dependability. Precautions are taken against even slight variations in the quality of welds, and one of the most common safeguards is Roebling Welding Wire.

This wire is made for exacting service. Special manufacturing methods are employed to insure unvarying purity and uniformity in every bundle and every ton of Roebling Wire. Give this wire to a skilled welder and welds of the same high strength and durability are a certain result.

Won't you try this custom-made wire and see how it "works"? Free samples of either gas or electric types will be promptly sent. Just ask our nearest office listed below.

JOHN A. ROEBLING'S SONS CO. - TRENTON, N. J.
Atlanta Boston Chicago Cleveland Los Angeles New York Philadelphia
Portland, Ore. San Francisco Seattle Export Dept. New York, N. Y.



WHY ROEBLING WELDING WIRE IS OF EXCEPTIONALLY HIGH QUALITY...

1. It is a custom-made wire; **2.** the steel for it is not made on the ordinary tonnage basis; **3.** it is made in small open-hearth furnaces; **4.** of special melting stock; **5.** and is produced by Roebling's special methods; **6.** painstaking care is exercised throughout manufacture.

ROEBLING

THE CUSTOM-MADE WELDING WIRE—FOR EXACTING WELDERS

NEW EQUIPMENT

PRODUCTION FABRICATION
TREATMENT FINISHING

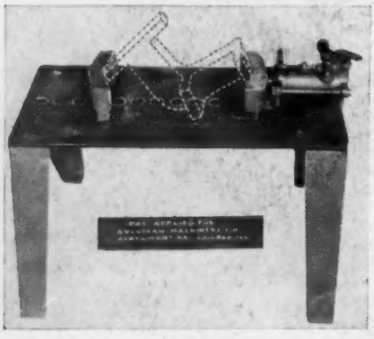
Portable Electric Grinder Weighs Three Pounds

Chicago Wheel & Mfg. Co., Chicago, recently has placed on the market a new high-speed, portable electric grinder which weighs only 3 pounds. It is said to be compact, well balanced and light. The motor housing is cast of aluminum and extends out over the motor shaft. The motor is of the universal type using either alternating or direct current, 110 volts. The grinder has a maximum speed of 17,000 revolutions per minute and is supplied with three grinding wheels, dressing stone, etc.

◆

Casting Holding Device Is Operated by Air

Manhattan Rubber Mfg. division of Raybestos-Manhattan Inc., Passaic, N. J., is distributing a casting holding device, shown herewith, which operates from the foundry air supply. It is known as the Sullivan



Sullivan casting holder marketed by Manhattan Rubber Mfg. Division

casting holder. Irregular castings of many shapes can be held by the unit for easy grinding or chipping. The table is supported by 24-inch legs with steel plate top 44 x 18 inches, and adjustable jaws that are designated for light work difficult to hold on a standard floor stand.

◆

New Testing Set Has Industrial Uses

Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., is marketing a portable alternating-current testing set, shown herewith, known as the industrial analyzer. Capable of making complete tests up to 125 amperes, 500 volts alternating current, the analyzer is in reality, a miniature portable three-phase

Industrial analyzer developed by Westinghouse Electric & Mfg. Co.

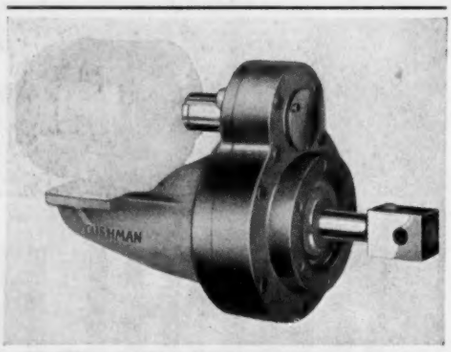
switchboard panel in a carrying case complete with all necessary switching equipment, transformers, and resistors.

The instrument is completely self-contained and is mounted in a durable rugged carrying case about the size of an ordinary suit case, dimensions being 7 x 11 x 19 inches.

◆

Push-Pull Power Units Electrically Operated

Cushman Chuck Co., Hartford, Conn., recently developed electrically-operated pull-push power units adaptable to numerous industrial uses including machine shop equipment such as vises, clamping fixtures, arbor presses, jacks, as well as for power clamps on shears or welding machines. Accompanying illustration depicts the flange mounting type. The unit is locked during the machining cycle, and the motor operates only during forward or reverse travel of the screw. Rotation of a nut turning on the thread of the drawbar causes the drawbar to move either forward or back, according to the direction in which the motor is running.



Pull-push power unit, flange mounting, built by Cushman Chuck Co.

◆

Combination Magnetic Starter Sturdy in Construction

Electric Controller & Mfg. Co., 2700 East Seventy-ninth street, Cleveland, recently developed a No. 1 type ZOS oil-immersed, across-the-line, combination magnetic starter for motors up to 15 horsepower, 220 volts, and 30 horsepower, 440-550 volts. Although designed for the severe service encountered in mill duty, these starters, shown herewith, are exceptionally small and narrow, having safety switch front-operated and a cover that swings vertically.

Heavy duty, extremely sturdy construction is used throughout. Safety switches have wiping wedge, double-break contacts, heavy gage steel parts with all actuating parts case hardened.

Design of the EC & M combination magnetic starter makes it particularly desirable for mounting in restricted spaces such as between flanges of columns, for mounting on motor-driven machines or grouped closely along a wall

◆

Announces New Sensitive Drilling Machine

Langelier Mfg. Co., Providence, R. I., is introducing a new sensitive drilling machine which can be supplied as a belt or motor-driven unit for operation on a bench or floor stand, or a treadle can be furnished for foot operation. The drill is rated at ¼-inch capacity and the following speeds can be obtained: 2500 revolutions per minute on the single speed belt-driven model, and 1250, 2250 or 3500 revolutions per minute with the low-speed, or 2500, 4500 or 7000 revolution per minute on the high-speed motor-driven machines.

Steel Decline Slows; Steadying Factors Appear

Industry Confident of Progress, as 90-Day Code Trial Period Expires—Railroads, Autobuilders Taking Action—Corporation Shipments Down Moderately

THIS week completes the 90-day trial period set for the steel industry's code, with the steelworks operating rate about 24 per cent, compared with 51 per cent when the President signed that document.

Despite this loss, however, steelmakers are convinced real progress has been made, and that the groundwork has been laid for a more rapid rise when present seasonal influences have run their course. The rate of decline is slower. A year ago at this time the rate was 20 per cent, and falling to a year-end low of 12 per cent.

Steadying factors are more apparent this year, and may overcome much of the seasonal inertia. With stocks in general consumers' hands still heavy, only moderate buying is expected for actual requirements over the remainder of the year. First specifications for new automobile models are being released, and as the month progresses they will provide better mill schedules.

Railroad buying is beginning to assume larger proportions. Co-ordinator Eastman's announcement that most of the 844,000 tons of government-financed rails should be allocated within two weeks may lead to early rolling of a substantial portion.

Railroads Authorizing Purchases; Some Price Announcements Due Nov. 20

The Pennsylvania is taking bids, as a formality, Nov. 23 on 100,000 tons of rails and 57,000 tons of accessories. New York, New Haven & Hartford has announced its intention to take 35,000 tons of rails and track fastenings; Boston & Maine, 30,000 tons; Rock Island, 26,400 tons; and Maine Central, 10,000 tons.

The Pennsylvania also is to proceed immediately with construction of 500 automobile box cars, starting its program for 7028 new freight cars. Award of freight cars in October increased to 514 from 23 in September; for the first ten months awards of 1611 compare with 1687 last year, and 30,797 in 1930.

New construction projects are restricted almost entirely to public works, interspersed with a few breweries. The number of federal-aid jobs coming out for bids is increasing steadily, but steel awards so far are comparatively small; for the week they were down to 7055 tons.

Strikes in eastern shipyards are interfering with plate orders and fabrication. For nine coast guard patrol boats 1350 tons of plates have been awarded; and for 48 pontoons and pipe for government work at Memphis, Tenn., 1150 tons. Award of 6550 tons of iron and steel pipe has been made for Cleveland watermains.

Iron and steel producers are cognizant of a strong feeling at Washington against further price advances on heavy materials, and are not disposed to take a contrary attitude. Some interests, especially pig iron sellers, are preparing to open books for first quarter Dec. 1, which will require them to file prices Nov. 20. Eastern iron producers are contemplating an advance, though in other districts it is believed the present state of the market will not support a general increase, either in iron or steel. Cast pipe prices have been raised $5 a ton.

Iron Shipments Heavier; Scrap Dull; Corporation's Shipments Off Moderately

Pig iron shipments this month are moderately ahead of those in the comparable period in October, due to melters' intentions to take out practically all fourth quarter tonnage. Demand for scrap is quiet, and prices easier.

Discontinuing its monthly report of unfilled tonnage, obviously because under code restrictions against selling ahead it no longer accurately reflects demand, the United States Steel Corp., is issuing instead a report on actual shipments, the October tonnage being 512,897 tons, down only 18 per cent from the July peak.

October was the third consecutive month of the decline in steel ingot production, the daily average—81,225 gross tons—being 8.6 per cent below September, and lowest since May. Total output for the month was 2,111,842 tons; and for the ten months this year, 19,516,437 tons, 71 per cent more than in the period last year.

Steelworks operations in the past week in the Detroit district dropped 18 points to 37 per cent; Youngstown, 11 to 21; New England, 5 to 75; Birmingham, 5 to 20; Chicago, 2 to 29; Pittsburgh, 2 to 23; eastern Pennsylvania, ½ point to 18½. They remained unchanged at 38 per cent at Wheeling, and 21 at Buffalo. Cleveland advanced 10 to 46. The national average was 24 per cent, down 1 point.

STEEL's iron and steel composite remains $31.59; finished steel, $49.20; while the scrap composite is off 42 cents to $9.62.

COMPOSITE MARKET AVERAGES

	Nov. 11	Nov. 4	One Month Ago Oct., 1933	Three Months Ago Aug., 1933	One Year Ago Nov., 1932	Ten Years Ago Nov., 1923
Iron and Steel Composite	$31.59	$31.59	$31.59	$30.04	$29.12	$42.81
Finished Steel Composite	49.20	49.20	49.20	47.50	47.20	67.48
Steelworks Scrap Composite	9.62	10.04	10.37	11.57	6.87	14.05

Iron and Steel Composite:—Pig iron, billets, slabs, sheet bars, wire rods, tin plate, nails, sheets, plates, shapes, bars, and black pipe. Finished Steel Composite:—Plates, shapes, bars, hot strip, nails, tin plate, pipe. Steelworks Scrap Composite:—Heavy melting steel and compressed sheets.

A COMPARISON OF PRICES

Representative Market Figures for Current Week; Average for Last Month, Three Months and One Year Ago

	Nov. 11, 1933	Oct. 1933	Aug. 1933	Nov. 1932
Finished Material				
Steel bars, Pittsburgh	1.75	1.75	1.60	1.60
Steel bars, Chicago	1.80	1.80	1.70	1.70
Steel bars, Philadelphia	2.04	2.04	1.91	1.91
Iron bars, Chicago	1.60	1.60	1.65	1.65
Shapes, Pittsburgh	1.70	1.70	1.60	1.60
Shapes, Philadelphia	1.90	1.90½	1.81½	1.75
Shapes, Chicago	1.75	1.75	1.70	1.70
Tank plates, Pittsburgh	1.70	1.70	1.60	1.60
Tank plates, Philadelphia	1.88	1.88½	1.79½	1.69½
Tank plates, Chicago	1.75	1.75	1.70	1.70
Sheets, No. 10, blue anneal., Pitts.	1.75	1.75	1.65	1.70
Sheets, No. 24, hot ann., Pitts.	2.25	2.25	2.25	2.10
Sheets, No. 24, galvan., Pitts.	2.85	2.85	2.85	2.85
Sheets, No. 10, blue anneal., Gary	1.85	1.85	1.75	1.80
Sheets, No. 24, hot ann., Gary	2.35	2.35	2.40	2.25
Sheets, No. 24, galvan., Gary	2.95	2.95	3.00	2.90
Plain wire, Pittsburgh	2.10	2.10	2.10	2.20
Wire nails, Pittsburgh	2.10	2.10	2.10	1.95
Tin plate, per base box, Pitts.	4.65	4.65	4.25	4.50
Semifinished Material				
Sheet bars, open-hearth, Youngs.	26.00	26.00	26.00	26.00
Sheet bars, open-hearth, Pitts.	26.00	26.00	26.00	26.00
Billets, open-hearth, Pittsburgh	26.00	26.00	26.00	26.00
Wire rods, Pittsburgh	35.00	35.00	35.00	37.00

	Nov. 11, 1933	Oct. 1933	Aug. 1933	Nov. 1932
Pig Iron				
Bessemer, del. Pittsburgh	19.26	19.26	18.26	15.76
Basic, valley	17.00	17.00	16.00	14.00
Basic, eastern, del. eastern Pa.	17.76	17.76	17.20	13.50
No. 2 foundry, del. Pittsburgh	18.76	18.76	17.76	15.76
No. 2 foundry, Chicago	17.50	17.50	17.00	15.50
Southern No. 2, Birmingham	13.50	13.50	13.00	11.00
No. 2X, Eastern, del. Phila.	18.63	18.63	17.88	13.95
Malleable, valley	17.50	17.50	16.50	14.50
Malleable, Chicago	17.50	17.50	17.00	15.50
Lake Superior charcoal, del. Chi.	23.54	23.54	23.04	23.04
Gray forge, del. Pittsburgh	18.38	18.38	17.13	15.63
Ferromanganese, del. Pittsburgh	87.24	87.24	87.24	73.24
Scrap				
Heavy melting steel, Pittsburgh	$11.50	12.45	13.75	9.15
Heavy melting steel, eastern Pa.	9.75	10.19	12.00	7.25
Heavy melting steel, Chicago	8.25	9.35	10.40	5.60
No. 1 wrought, eastern Pa.	10.50	10.75	13.00	7.25
No. 1 wrought, Chicago	8.10	9.10	10.35	5.60
Rails for rolling, Chicago	10.25	11.10	11.25	8.25
Coke				
Connellsville, furnace, ovens	3.75	3.25	2.75	1.80
Connellsville, foundry, ovens	4.25	3.85	3.10	2.65

Steel, Iron, Raw Material and Metals Prices

Prices conform to American Iron and Steel institute schedules. Asterisk denotes price change this week

Sheet Steel

HOT ROLLED No. 10
(24 to 48 inches wide)

Pittsburgh, base	1.75c
Gary, base	1.85c
Chicago, del.	1.88½c
New York, del.	2.08c
Phila., del.	2.04c
Birm., base	1.90c
St. Louis, del.	2.07c

HOT ROLLED ANN. No. 10

Pittsburgh, base	1.90c
Gary, base	2.00c
Chicago, del.	2.03½c
Phila., del.	2.19c
New York, del.	2.23c
St. Louis, del.	1.97c
Birm., base	2.05c
F.o.b. cars, dock Pacific ports	2.42½c

HOT ROLLED ANN. No. 24

Pittsburgh, base	2.25c
Gary, base	2.35c
Chicago, del.	2.38½c
Detroit, delivered	2.45c
New York, del.	2.58c
Phila., del.	2.54c
Birm., base	2.40c
St. Louis, del.	2.57c
F.o.b. cars, dock, Pacific ports	2.95c

GALVANIZED No. 24

Pittsburgh, base	2.85c
Gary, base	2.95c
Chicago, del.	2.98½c
Phila., del.	3.14c
New York, del.	3.18c
Birm., base	3.00c
St. Louis, del.	3.17c
San Fran., f.o.b. cars, dock	3.55c

TIN MILL BLACK No. 28

Pittsburgh, base	2.50c
Gary, base	2.60c
St. Louis, del.	2.82c

COLD ROLLED No. 10

Pittsburgh, base	2.30c
Detroit, delivered	2.50c
Gary, base	2.40c
Philadelphia, del.	2.59c
New York, del.	2.63c

COLD ROLLED No. 20

Pittsburgh, base	2.75c
Detroit, delivered	2.95c
Gary, base	2.85c
Philadelphia, del.	3.04c
New York, del.	3.08c

ENAMELING SHEETS

Pitts., No. 10	2.45c
Pitts., No. 20	2.90c

Tin and Terne Plate

Per 100-lb. box, Pittsburgh Gary base, 10 cents higher.

Tin plate, coke base, contract	$4.65
Do., stock	4.05
Long ternes, No. 24 unassorted	2.90c

Corrosion and Heat Resistant Alloys

Base, Pittsburgh

18% chrome, 8% nickel: sheets, 35c; plates, 31c; bars, 28c.

	A	B	C	D
Bars	17c	18.5c	21c	26c
Plates	20c	21.5c	24c	29c
Sheets	25c	28c	31c	35c
Hot Strip	17c	18.5c	21c	26c
Cold Strip	22.5c	24c	27c	35c

Carbon 0.12 and under; no nickel. A has chrome 15% and under. B over 15/18% inc., C over 18/23% inc., D over 23/30%.

Steel Plates

Pittsburgh, base	1.70c
New York, del.	1.98c
Phila., del.	1.88½c
Boston, del.	2.10c
Buffalo, del.	1.93½c
Chicago, base	1.75c
Cleveland, del.	1.88½c
Birm., base	1.85c
Coatesville, base	1.80c
Sparrows Pt., base	1.80c
Pac. Coast, f.o.b. St. Louis, del.	1.97c
cars, dock	2.25c

Structural Shapes

Pittsburgh, base	1.70c
Philadelphia, del.	1.90½c
New York, del.	1.95½c
Boston, del.	2.08½c
Bethlehem, base	1.80c
Chicago, base	1.75c
Cleveland, del.	1.88½c
Buffalo, base	1.80c
Birm., base	1.85c
Pac. Coast, f.o.b. cars, dock	2.25c

Bars

SOFT STEEL

Pittsburgh, base	1.75c
Chicago, base	1.80c
Birm., base	1.90c
Buffalo, base	1.85c
Cleveland, base	1.80c
Detroit, delivered	1.90c
Pac. Coast ports, cars, dock, c.i.f.	2.30c
Philadelphia, del.	2.04c
Boston, del.	2.19c
New York, del.	2.08c
Pitts., forg. qual.	1.75c-2.25c

RAIL STEEL
To Manufacturing Trade

Pittsburgh	1.65c
Chicago	1.70c
Cleveland	1.70c
Gary, Ind.	1.70c
Buffalo	1.75c

IRON

Chicago, base	1.60c
Philadelphia, base..	1.74c
Pitts., refined	2.75c-7.50c

REINFORCING

New billet, mill lengths, c. l.	
Pittsburgh	1.80c
Chicago, Gary, Buffalo, Cleve., Birm., Young...	1.85c
Gulf ports	2.20c
Pacific coast ports	2.35c
*Philadelphia, del.	2.09c

Rail steel

Pittsburgh, base	1.75c
Chicago, Buffalo, Cleveland, Birm., Young	1.80c
Gulf ports	2.15c
Pacific coast ports	2.30c

Wire Products □ □

(Prices on carloads. Mixed carloads up 10c; joint carloads up 20c; less carloads up 30c. 10% dis. on nail extras on straight or mixed carloads to one consignee.)

Base, Pittsburgh-Cleveland

(Per 100-lb. keg)

Standard wire nails	$2.10
Cement coated nails	2.10
Galvanized nails	3.60

(Per pound)

Polished staples	2.80c
Galvanized fence staples	3.05c
Barbed wire, gal.	2.60c
Annealed fence wire	2.25c
Galvanized fence wire	2.60c
Woven wire fencing (base column, c.l.)	$55.00
Plain wire, 6-9 gage to mfg. trade	2.10c

Anderson, Ind., Chicago up $1; Duluth up $2; Birmingham up $3.

Spring wire	3.10c

Chicago and Waukegan $1 higher, Worcester $2 higher.

Cold-Finished Carbon Bars

Base Pitts., one size, shape, grade, shipment at one time to one destination

10,000 to 19,999 lbs.	1.95c
20,000 to 59,999 lbs.	1.90c
60,000 to 99,999 lbs.	1.85c
100,000 lbs. and over	1.82½c

Chicago, Cleveland, Buffalo up 5c; Detroit up 20c; eastern Michigan up 25c.

Shafting □ □ □

Turned and ground, Pitts. base	
1⅛-inch	3.25c
1⅜ to 1½-inch	2.75c
1⅝ to 1⅞-inch	2.60c
1⅞ to 2⅞-inch	2.45c
2⅛ to 6-inch	2.30c

Alloy Steel Bars □

Hot rolled

Pittsburgh, Buffalo, Chicago, Massillon	2.45c
Bethlehem	2.55c

Alloy S.A.E.	Diff.	Alloy S.A.E.	Diff.
2000	0.25	3100	0.55
2100	0.55	3200	1.35
2300	1.50	3300	3.80
2500	2.25	3400	3.20
4100 .15 to .25 Mo			0.50
4600 .20 to .30 Mo. 1.25-1.75 Ni.			1.05
5100 .80-1.10 Cr.			0.45
5100 Cr. spring			base
6100 bars			1.20
6100 spring			0.70
Cr., Ni., Van.			1.50
Carbon van.			0.95
9250	carbon base plus extras		

Strip and Hoops □

Hot strip to 23⅛-in. Pitts.	1.75c
Do., Chicago	1.85c
Do., del. Detroit..	1.95c
Do., del. Phila.	2.04c
Do., del. N. Y.	2.08c
Cooperage hoop, Pittsburgh	1.85c
Do., Chicago	1.95c
Cold-rolled strip, Pitts., Cleve.	2.40c
Worcester	2.60c

Rails, Track Material □

(Gross Ton)

Stand. rails, mill	$36.37½
Relay rails, Pitts.	
20-45 lbs.	$26.00
50-60 lbs.	$23.00
70-75 lbs.	$18.00
80-85 lbs.	$24.00
100 lbs.	$25.00
Light rails, billet qual., Pitts., Chi.	$32.00
Do., reroll. qual.	$31.00
Angle bars, mills	2.55c
Spikes, R. R., base	2.40c
Track bolts, base	3.40c
Tie plates, base	1.90c

Base, light rails 25 to 40 lbs.; 50 to 60 lbs. inclusive up $5; 16 and 20 lbs. up $1; 12 lbs., up $2; 8 and 10 lbs. up $5. Base railroad spikes 200 kegs or more; base tie plates 20 tons or more; diff. for less.

Bolts and Nuts □ □

Pittsburgh, Cleveland, Birmingham, Chi. Discounts to legitimate jobbing or large consuming trade for full case lots, Dec. 1, 1932, lists.

CARRIAGE BOLTS

All sizes, cut thread	70 off
Rolled thread, ⅛ x 6 and smaller	70 off

MACHINE BOLTS

All sizes, cut thread, lag screws, plow bolts, Nos. 1-2-3-7 heads, tap bolts, blank bolts, stud bolts without nuts	70 off
Tire bolts	60 off
Stove bolts, 72½-25-10 off in pkgs.; 85 off in bulk, 5000 or more of a size.	
Rolled thread machine bolts, ½ x 6 and smaller,	66 off
Step bolts	66 off
Elevator bolts	66 off

NUTS

Semifinished	70 off

HEXAGON CAP SCREWS

Milled	85 off
Upset 1-in., smaller	85-10 off

SQUARE HEAD SET SCREWS

Upset, 1-in., smaller	80 off
Upset, larger than 1-in.	80 off
Headless set screws	75-10 off

Rivets, Wrought Washers

Struc., c.l., Pitts. Cleve.	2.75c
Struc., c.l., Chi.	2.85c
7/16-in. & smaller, Pitts., Chi., Cleve.	70 and 10 off
Wrought washers, Pitts., Chi., Phila.	6.00-6.25 off

Cut Nails, Piling □

Cut nails, Pitts.; (10% discount on size extras)	$2.75
Do. less carloads, 5 kegs or more; no discount on size extras	$3.00
Do., less than 5 kegs; no discount on size extras	$3.15
Steel piling, Pitts.	2.00c
Steel piling, Chi., Buff.	2.10c

Pipe and Tubing

Base $200 net ton, except on standard comercial seamless boiler tubes under 2 inches and cold drawn seamless tubing.

Welded Iron, Steel Pipe

Base discounts on steel pipe, Pitts., Gary, Ind., Lorain, O., to consumers in carloads. Indiana Harbor, Ind., and Evanston, Ill., 2 points less. Chicago delivered, 2½ points less. Wrought pipe, Pittsburgh base.

BUTT WELD

In.	Blk.	Gal.
Steel		
¼ and ⅜	57	38½
½	62	50½
¾	65½	55½
1—3	67½	58½
Iron		
½	31½	15
¾	36½	20½
1—1¼	39½	25½
2	41½	26

LAP WELD

Steel		
2	63½	54½
2½—3	66½	57½
3½—6	68½	59½
7 and 8	67½	57½
9 and 10	67	57
Iron		
2	37	22½
2½—3½	38	25
4—8	40	28½
9—12	38	24½

LINE PIPE

Steel	
⅛-inch, butt weld	50½
¼—⅜, butt weld	56
½, butt weld	61
¾, butt weld	64½
1—3, butt weld	66½
2-inch, lap weld	62½
2½—3, lap weld	65½
3½—6, lap weld	67½
7—8, lap weld	66½
Iron	
⅛—1½ inch, black and galv. take 4 pts. over; 2½—6 inch 2 pts. over discounts for same sizes, standard pipe list. 8—12 inch no extra.	

BOILER TUBES

C. L. Discounts, f.o.b. Pitts.

Lap Weld Steel		*Charcoal Iron*	
2—2¼	33	1¾	8
2½—2¾	40	2—2¼	13
3	47	2½—2¾	16
3¼—3¾	50	3	17
4	52	3¾—3½	18
4½—6	42	4	20
1½	1	4½	21

On lots of a carload or more, above discounts subject to preferential of two 5% discounts on steel and 10% on charcoal iron.

Lapwelded steel: Under 10,000 lbs., 6 pts. under base and one 5%; on 10,000 lbs. to carload, 4 pts. under base and two 5%. Quantity discounts same as for hot-rolled. Charcoal iron: Under 10,000 lbs., 2 pts. under base; on 10,000 lbs. to carload, base and one 5%.

SEAMLESS BOILER TUBES

Cold Drawn			
2—2¼	27	3¼—3½	44
2½—2¾	34	4	46
3	41	4½, 5, 6	46

(On 1—1¾-inch sizes mechanical tubing dis. apply.)

Hot Rolled			
2—2¼	33	3¼—3½	50
2½—2¾	40	4	52
3	47	4½, 5, 6	42

Quantity discounts: Under 10,000 lbs., 10 pts. and 5%; 10,000 to 24,999 lbs., 6 pts. and 5%; 25,000 lbs. to carload, 2 pts. and 5 and 5%; carload and over, base discount and 5 and 5%. No extra for lengths 24 ft. and under.

Seamless Tubing □

Cold drawn; f.o.b. mill disc.

100 ft. or 150 lbs.	32%
15,000 ft. or 22,500 lbs.	70%

Cast Iron Water Pipe □

Class B Pipe—Per Net Ton

6-in. & over, Birm.	$35.00-36.00
4-in., Birm.	38.00-39.00
4-in., Chicago	46.00-47.00
6 to 24-in., Chicago	43.00-44.00
6-in. & over, east fdy.	40.00
Do., 4-in.	43.00

Class A pipe $3 over Class B. Stand. fitgs., Birm, base..$90.00

Six to 24-inch, fittings, base; over 24-inch plus $20; 4-inch, plus $10; 3-inch, plus $20; gas pipe fittings, $5 higher.

Semifinished Steel □

Prices Per Gross Ton

BILLETS AND BLOOMS

4 x 4-inch base

Pitts., Chi., Cleve., open-hth. & bess.	$26.00
Philadelphia	31.30
Forging, Pitts., Chi.	31.00

SHEET BARS

Pitts., Cleve., Yong.	26.00
Chicago	26.00
Canton, O.	26.00

SLABS

Pitts., Cleve., Yong.	26.00

WIRE RODS

Pitts., Cleveland	$35.00
Chicago	36.00

SKELP

All grades, Pitts. and Chicago	1.60c

Coke □ □

Price Per Net Ton

BEEHIVE OVENS

Connellsville fur.	$3.75
Connellsville fdry.	4.25
Connell. prem. fdry.	5.25
New River fdry.	6.00
Wise county fdry.	4.25- 5.00
Wise county fur.	3.50- 4.25

BY-PRODUCT FOUNDRY

Newark, N. J., del.	8.71- 9.31
Chi. ov., outside del.	8.50
Chicago, del.	9.25
New England, del.	10.50
St. Louis, del.	8.75
Birmingham, ovens	4.75
Indianapolis, del.	8.75
Ashland, Ky., Connells., basis	5.50
Portsmouth, ovens, Connell. basis	5.50
Buffalo, ovens	7.50- 8.00
Detroit, ovens	8.00
Philadelphia, del	9.00

Coke By-Products □

Per gallon, producers' plants, Tank lots

	Spot
Pure benzol	$0.22
90 per cent benzol.	0.22
Toluol	0.30
Solvent naphtha	0.26
Commercial xylol	0.26

Per lb., f.o.b. New York

Phenol (200 lb. drums)	0.163c
Do., (100 lb.)	0.173c

Per lb., producers' plants

Naphthalene flakes and balls	6.00- 7.25

Per 100 lb., Atlantic seaboard

Sulphate of ammonia	$1.20

Pig Iron

Delivered prices do not include switching charges except as noted. No. 2 foundry iron is 1.75-2.25 silicon; 25-cent differentials apply for each 0.25 silicon above 2.25

Gross Tons

	No. 2 Fdry.	Malleable	Basic	Bessemer
Basing Points:				
Bethlehem, Pa.	$17.50	$18.00	$17.00	$18.50
Birdsboro, Pa.	17.50	18.00	17.00	18.50
Swedeland, Pa.	17.50	18.00	17.00	18.50
Sparrows Point, Md.	17.50	18.00	17.00	18.50
From Swedeland, Pa., del. to Phila.	18.26	18.76	17.76	.....
From Bethlehem, del. to Brooklyn..	19.77	20.27	.....	.....
From Bethlehem, del. to Newark, N. J.	18.99	19.39	.....	.....
Basing Point:				
Everett, Mass	18.00	18.50	17.50	19.00
From Everett, del. to Boston	18.50	19.00	18.00	19.50
Basing Point:				
Buffalo	17.50	18.00	16.50	18.50
From Buffalo, del. to Boston	18.50	19.00	18.00	19.50
Basing Points:				
Neville Island, Pa.	18.00	18.00	17.50	18.50
Sharpsville, Pa.	17.50	17.50	17.00	18.00
Youngstown, O.	17.50	17.50	17.00	18.00
From Neville Island, Pa., del. to Pittsburgh	(Neville Island base, plus 50 to 76 cents switching charges)			
Basing Points:				
Erie, Pa.	17.50	18.00	17.00	18.50
Cleveland	17.50	17.50	17.00	18.00
Toledo, O.	17.50	17.50	17.00	18.00
Detroit	17.50	17.50	17.00	18.00
From Detroit, del. to Saginaw, Mich.	19.60	19.60	19.10	20.10
From Cleveland, del. to Akron, Canton, O.	18.76	18.76	18.26	19.26
From Toledo, del. to Mansfield, O...	19.26	19.26	18.76	19.76
Basing Point:				
Hamilton, O.	17.50	17.50	17.00	18.00
From Hamilton, del. to Cincinnati	18.51	18.51	18.01	19.01
Do., del. to Indianapolis	19.77	19.77	19.27	20.27
Basing Points:				
Duluth	18.00	18.00	.....	18.50
Chicago	17.50	17.50	17.00	18.00
Granite City, Ill.	17.50	18.00	17.00	.....
From Duluth, del. to St. Paul	19.94	19.94	.....	20.44
From Chicago, del. to Milwaukee..	18.50	18.50	18.00	19.00
From Chicago, Toledo or Detroit, del to Muskegon, Mich.	20.40	20.40	19.90	20.90
From Granite City, del. to St. Louis	(Granite City base, plus 50-cent switching charge)			
Basing Point:				
Birmingham, Ala.	13.50	.....	12.50	.....
From Birmingham del. to:				
Boston	18.12	.....	17.62	.....
Newark, N. J.	18.51	.....	.....	.....
Brooklyn, N. Y.	19.39	.....	.....	.....
Baltimore	18.02	.....	17.52	.....
Cleveland	19.64	.....	18.64	.....
Cincinnati	18.23	.....	17.11	.....
Chicago	18.16	.....	19.14	.....
St. Louis	17.62	.....	17.50	.....
Basing Point:				
Provo, Utah	16.50	.....	.....	.....

LOW PHOS.

Basing points: Birdsboro, Pa., Steelton, Pa., and Standish, N. Y.—$22.00. Basing point: Johnson City, Tenn.—.....

Philadelphia, standard and copper bearing..... 23.13

GRAY FORGE		CHARCOAL	
Valley furnace	17.25	Lake Superior fur	20.50
Pitts. dist. fur.	17.75	Do., del. Chicago	23.54

SILVERY

Jackson County, O., base: 6%—$22.25; 7—$23.25; 8—$24.25; 9—$25.25; 10—$26.25; 11—$27.75.

BESSEMER FERROSILICON

Jackson County, O., base: 10%—27.25; 11—$28.75; 12—$30.25; 13—31.75; 14—$33.25; 15—$34.75; 16—$36.25.

Iron Ore

LAKE SUPERIOR ORE

Gross ton, 51½%, Lower Lake Ports

Old range bess.	$4.30
Mesabi bessemer	4.65
Old range nonbess.	4.65
Mesabi nonbess.	4.50
High phosphorus	4.40

EASTERN LOCAL ORES

Cents, unit, del. E. Pa.

Foundry and basic, 56-63%, con. (nom.)	8.00- 9.00
Cop-free low phos. 58-65% (nom.)	10.00-10.50

FOREIGN ORE

Cents per unit, f.a.s. Atlantic ports (nom.)

Foreign manganiferous ore, 45-55% iron, 6-10% man.	8.50
No. Afr. low phos.	7.00
Swedish basic, 65%	8.00
Swedish low phos.	8.50
Spanish, No. Afr. basic, 50 to 60%..	7.00
Tungsten, spot, sh. ton unit, duty pd.	$14.00-14.25
N. F. fdy., 55%.....	7.00
Chrome ore, 48% gross ton c.i.f.	$17.00-18.00

Manganese Ore

(Nominal)

Prices, not including duty, cents per unit, cargo lots.

Caucasion, 52-55%	22.00
So. African, 52%..	21.00-22.00
So. Afr., 49-51%....	20.00-21.00
Indian, 48-50%	nominal

Refractories

FIRE CLAY BRICK

Per 1000 f.o.b. Works

First Quality

Pa., Ohio, Ill., Ky., Md., Ga., Mo.	$45.00
Alabama	48.00

Second Quality

Pa., Ohio, Ill., Ky., Md., Mo., Ga., Ala.	40.00

MALLEABLE BUNG BRICK

All bases	50.00

SILICA BRICK

Pennsylvania	$45.00
Joliet E. Chicago ..	54.00
Birmingham, Ala....	55.00

MAGNESITE BRICK

Per Net Ton, 9 x 4½ x 2½

Burned	$65.00
Unburned	55.00

CHROME BRICK

Per Net Ton

F.o.b. ship. point....	$45.00

MAGNESITE

Dead burned grain, Chester, Pa., Baltimore bases, net	40.00
Domes, Chewelah, Wash., base	22.00

Fluorspar

85 and 5 per cent grade

Washed gravel, duty paid, tide, gross ton	$20.00
Washed gravel f.o.b. Ill., Ky., net ton, carloads	$15.00

Ferroalloys

(In dollars, except Ferrochrome)

Ferromanganese, 78-82% tidewater, duty pd.	82.00
del. Pitts.	87.24
Spiegeleisen, 19-20%, dom., fur., spot†	27.00
Ferrosilicon, 50%, frieght all., c. l.	74.50
Do, less carload..	82.50
Do, 75 per cent....	120-130.00
Spot, $5 a ton higher.	
Silicomang., 2½ carb.	85.00
2% carbon	90.00
1% carbon	100.00
Ferrodhrome, 66-70 chromium, 4-6 carbon, cts. lb. con. del.	9.50
Do, spot del.	10.00
Ferrotungsten, stand., lb. cont.	1.16- 1.25
Ferrovanadium, 35 to 40%, lb. cont., on analysis	2.60- 2.80
Ferrotitanium, c.l., prod. plant, frt. allow., net ton	137.50
Spot, 1 ton., frt., all., lb.	7.00
Do, under 1 ton	7.50
Ferrophosphorus, per ton, c. l. 17-19%. Rockdale, Tenn., basis; 18%, $2 unitage	50.00
Ferrophosphorus, electrolytic, per ton c. l., 23-26% f.o.b. Anniston, Ala., 24% $2.75 unitage	65.00
Ferromolybdenum, stand. 50-60%, lb	0.95
Molybdate, lb. cont.	0.80

†Carloads. Quan. diff. apply.

Nonferrous Mill Products

F.o.b. mill base, cents per lb., except as specified. Copper, brass products based on 9.00c, Conn., copper

Sheets

Yellow brass (high)	14.75
Copper, hot rolled	17.12½
Lead, cut to jobbers	8.00
Zinc, 100-lb. base....	9.00

Tubes and Pipes

High yellow brass..	16.37½
Seamless copper....	16.62½

Rods

High yellow brass..	12.25
Copper	13.37½

Anodes

Copper, untrimmed	14.50

Wire

Yellow brass (high)	14.75

Old Metals

Deal. buying prices, cents lb.

No. 1 Composition Red Brass

*New York	4.37½-4.87½
*Chicago	4.25- 4.50
Cleveland	4.25- 4.75
St. Louis	3.50- 3.75

Heavy Copper and Wire

*New York	6.12½-6.37½
Chicago, No. 1	5.75- 6.00
Cleveland	5.00- 5.50
St. Louis	5.25

Composition Brass Borings

*New York	4.12½-4.37½

Light Copper

*New York	5.25- 5.50
*Chicago	4.50-4.87½
Cleveland	4.50- 5.00
St. Louis	4.25

Light Brass

Chicago	2.75- 3.00
Cleveland	2.50- 3.00

Lead

New York	3.25- 3.37½
Cleveland	3.00- 3.25
*Chicago	3.00- 3.25
St. Louis	2.50- 2.75

Zinc

New York	2.25- 2.50
Cleveland	2.25- 2.50
*Chicago	2.00- 2.25
St. Louis	2.25- 2.50

Aluminum

Clips, soft, Cleve.	11.50-12.00
Borings, Cleve.	4.75- 5.00
Mixed, cast, Cleve.	7.25- 7.50
Mixed, cast, St. L...	7.00- 7.50

Secondary Metals

*Brass ingot. 85-5-5-5	8.75
Remelt Al., No. 12..	12.00-12.50

Iron and Steel Scrap Prices

Corrected to Friday night. Gross tons delivered to consumers, except where otherwise stated

HEAVY MELTING STEEL □

Birmingham	8.50- 9.00
Boston, dealers	5.75- 6.00
Buffalo, No. 1	9.25-10.00
Buffalo, No. 2	8.00- 8.50
Chicago	8.00- 8.50
Cleveland, No. 1	9.00
Cleveland, No. 2	8.50
Detroit, No. 1	7.00- 7.50
Detroit, No. 2	6.25- 6.75
Eastern Pa.	10.00
Eastern Pa.	9.50-10.00
Federal, Ill.	7.75- 8.25
Granite City, Ill.	8.00- 8.50
N. Y., deal. R. R.	7.50
N. Y., deal. No. 2	6.50
Pittsburgh, No. 1	11.25-11.75
St. L., No. 1 del.	8.50- 9.00
Valleys, No. 1	12.50-13.00

COMPRESSED SHEETS □

Buffalo, dealers	8.00- 8.50
Chicago, factory	7.00- 7.50
Cleveland	8.00- 8.25
Detroit	7.00- 7.50
E. Pa., new mat.	9.50-10.00
Pittsburgh	11.00-11.50
Valleys	12.00-12.50

BUNDLED SHEETS □ □

Buffalo	5.50- 6.00
Cincinnati, del.	5.50- 6.00
Cleveland	6.50- 7.00
Eastern Pa.	9.00- 9.50
Pittsburgh	10.00-10.50
St. Louis	5.00- 5.50

SHEET CLIPPINGS LOOSE □

Chicago	4.00- 4.50
Cincinnati	4.50- 5.00
Detroit	5.00- 5.50
St. Louis	4.50- 5.00

STEEL RAILS, SHORT □

Birmingham	10.00-11.00
Boston, dealers	5.75- 6.00
Buffalo	12.00-12.50
Chicago (3 ft.)	10.00-10.50
Chicago (2 ft.)	10.50-11.00
Cincinnati, del.	11.00-11.50
Detroit	8.50- 9.00
Pitts., (open-hearth, 3 ft. and less)	13.00-13.50
St. Louis	10.50-11.00

STOVE PLATE □ □

Birmingham	6.50- 7.00
Boston, dealers	4.50- 4.75
Buffalo	8.50- 9.00
Chicago, net	6.00- 6.50
Cincinnati, dealers	6.00- 6.50
Detroit, net	4.50- 5.00
Eastern Pa.	8.00- 8.50
N. Y., deal., fdry.	5.00- 5.50
St. Louis	6.50- 7.00

COUPLERS, SPRINGS □

Buffalo	11.50-12.00
Chicago	9.00- 9.50
Eastern Pa.	13.00-13.50
Pittsburgh	13.00-13.50
St. Louis	9.00- 9.50

ANGLE BARS—STEEL □

Chicago	9.00- 9.50
St. Louis	8.75- 9.00

LOW PHOSPHORUS □ □

Buffalo, billets and bloom crops	11.50-12.50
Cleveland bil. and bloom crops	12.50-13.50
Eastern Pa. crops	14.00-14.50
Pittsburgh billet bloom crops	13.00-13.50
Pitts., sheet bar crops	13.00-13.50

FROGS, SWITCHES □ □

Chicago	8.50- 9.00
St. Louis	9.00- 9.50

SHOVELING STEEL □

Chicago	8.00- 8.50
Cleveland	10.50-11.00
St. Louis	8.00- 8.50

RAILROAD WROUGHT □

Birmingham	7.00- 8.00
Boston, dealers	2.00- 2.50
Buffalo, No. 1	7.00- 8.00
Buffalo, No. 2	9.50-10.00
Chi., No. 1, net	7.00- 7.50
Chi., No. 2	8.00- 8.50
Cinci., No. 2	8.00- 8.50
Eastern Pa.	10.50
N. Y., No. 1 deal.	7.00- 7.50
Pittsburgh, No. 1	11.25-11.75
St. Louis, No. 1	6.00- 6.50
St. Louis, No. 2	8.00- 8.50

SPECIFICATION PIPE □

Boston	4.00- 4.50
Eastern Pa.	9.50
N. Y., deal.	4.75- 5.25

BUSHELING □ □

Buffalo, No. 1	8.00- 8.50
Chicago, No. 1	7.00- 7.50
Cinci., No. 1 deal.	5.75- 6.25
Cinci., No. 2	2.50- 3.00
Cleve., No. 2	7.00- 7.25
Det., No. 1 new	6.25- 6.75
St. Louis, No. 1	4.50- 5.00
Val. new No. 1	12.50-13.00

MACHINE TURNINGS □

Birmingham	3.50- 4.50
Boston, dealers	2.00
Buffalo	6.25- 6.50
Chicago	5.00- 5.50
Cinci., dealers	4.50- 5.00
Cleveland	6.75- 7.00
Detroit	5.50- 6.00
Eastern Pa.	6.50
N. Y., deal.	4.00- 4.50
Pittsburgh	8.00- 8.50
St. Louis	4.00- 4.50
Valleys	10.75-11.00

BORINGS AND TURNINGS □

For Blast Furnace Use

Boston, dealers	2.00
Buffalo	6.25- 6.50
Cinci., dealers	4.50- 5.00
Cleveland	6.75- 7.00
Detroit	6.00- 6.50
Eastern Pa.	5.50- 6.00
N. Y., deal.	3.00
Pittsburgh	7.50- 8.00

CAST IRON BORINGS □

Birming., plain	3.50- 4.50
Boston, chemical	8.50- 9.00
Boston, dealers	3.25- 3.50
Buffalo	6.25- 6.50
Chicago	5.00- 5.50
Cinci., dealers	4.50- 5.00
Cleveland	6.75- 7.00
Detroit	6.00- 6.50
E. Pa., chemical	12.00-15.00
New York, dealers	3.00
Pittsburgh	7.50- 8.00
St. Louis	4.00- 4.50

PIPE AND FLUES □ □

Cinci., dealers	4.00- 4.50

RAILROAD GRATE BARS □

Buffalo	5.00- 5.50
Chicago, net	6.00- 6.50
Cincinnati	4.75- 5.25
Eastern Pa.	8.00- 8.50
New York, dealers	5.25- 5.50
St. Louis	5.50- 6.00

FORGE FLASHINGS □ □

Boston, dealers	3.75- 4.00
Buffalo	8.00- 8.50
Cleve., over 10-in.	9.00- 9.50
Detroit	5.50- 6.00

FORGE SCRAP □ □

Boston, dealers	4.00- 4.50
Chicago, heavy	9.50-10.00
Eastern Pa.	10.00-10.50

ARCH BARS, TRANSOMS □

Chicago, net	6.50- 7.00
St. Louis	9.00- 9.50

AXLE TURNINGS □ □

Boston, dealers	3.50- 3.75
Buffalo	7.50- 8.00
Chicago, elec. fur.	7.00- 7.50
Cleveland	9.50-10.00
Eastern Pa.	9.50-10.00
St. Louis	5.00- 5.25

STEEL CAR AXLES □

Birmingham	8.00- 9.00
Boston, ship. point.	8.00- 8.50
Buffalo	10.00-11.00
Chicago, net	10.00-10.50
Eastern Pa.	15.00
St. Louis	11.00-11.50

SHAFTING □ □

Boston, ship. point	9.25-9.50
Eastern Pa.	15.00
New York, dealers	10.00-10.25
St. Louis	7.50- 8.00

CAR WHEELS □ □

Birmingham, iron	7.50- 8.50
Boston, iron deal.	6.00- 6.50
Buffalo, iron	8.00- 9.00
Buffalo, steel	10.50-11.00
Chicago, iron	9.00- 9.50
Chi., rolled steel	9.50-10.00
Cincinnati, iron	8.00- 8.50
E. Pa., iron	11.50-12.00
E. Pa., steel	13.00-13.50
Pittsburgh, iron	10.50-11.00
Pittsburgh, steel	13.00-13.50
St. Louis, iron	6.50- 7.00
St. Louis, steel	9.50-10.00

NO. 1 CAST SCRAP □ □

Birmingham	9.00- 9.50
Boston, No. 2	5.00- 5.50
Boston, Tex. con.	10.75-11.00
Buffalo, cupola	9.50-10.00
Buffalo, mach.	10.00-10.50
Chicago, agri. net	7.00- 7.50
Chi., mach. net	7.75- 8.25
Chi., railroad net	8.00- 8.50
Cinci., mach. cup	8.00- 8.50
Cleveland, cupola	8.50- 9.00
Detroit, net	7.00 7.50
E. Pa., cupola	12.00
N. Y., cup. deal.	6.00- 6.50
N. Y., del. local foundries	9.00- 9.50
Pittsburgh, cupola	11.00-11.50
San Fran., del.	13.50-14.00
Seattle	4.50- 6.50
St. Louis, No. 1	8.00- 8.50
St. L., No. 1 mach.	8.50- 9.00

HEAVY CAST □ □

Boston, del.	5.75- 6.00
Buffalo, break	7.00- 7.50
Cleveland, break.	7.00- 7.25
Detroit, break	5.00- 5.50
Detroit, auto net	7.50- 8.00
Eastern Pa.	10.00-10.50
N. Y., No. 1, deal.	7.00- 7.50
N. Y., break. deal.	6.00- 6.50
Pittsburgh	10.50-11.00

MALLEABLE □ □

Boston, consum.	12.00-12.25
Buffalo	10.00-11.00
Chicago, R. R.	8.50- 9.00
Cinci., agri. del.	8.00- 8.50
Cinci., R. R. del.	8.50- 9.00
Cleveland, rail	11.50-12.00
Detroit, auto	6.50- 7.00
St. Louis, R. R.	8.00- 8.50
Eastern Pa., R. R.	12.50-13.00

RAILS FOR ROLLING □

5 feet and over

Birmingham	9.50-10.50
Boston, dealers	7.00- 7.25
Buffalo	9.00- 9.50
Chicago	10.00-10.50
Eastern Pa.	12.50
New York, dealer	7.00- 7.50
St. Louis	9.25- 9.75

LOCOMOTIVE TIRES □

Chicago (cut)	9.50-10.00
St. L., No. 1	8.00- 8.50

LOW PHOS. PUNCHINGS □

Buffalo	11.00-11.50
Chicago	10.00-10.50
Eastern Pa.	12.50-13.50
Pittsburgh	13.00-13.50

Nonferrous Metal Prices of the Week

Spot unless otherwise specified. Cents per pound

	Copper: Electro., del. Conn.	Copper: Lake, del. Midwest	Copper: Casting, refinery	Straits Tin: New York Spot	Straits Tin: New York Futures	Lead: N. Y.	Lead: East St. L.	Zinc: St. L.	Aluminum: 98-99%	Antimony: Spot, N. Y.	Ingot Nickel
Nov. 4	8.00	8.12½	7.75	49.80	50.25	4.30	4.15	4.50	*22.90	6.70	35.00
Nov. 6	8.00	8.12½	7.75	50.00	50.45	4.30	4.15	4.50	*22.90	6.70	35.00
Nov. 7—Holiday											
Nov. 8	8.00	8.12½	7.75	51.60	52.05	4.30	4.15	4.50	*22.90	6.70	35.00
Nov. 9	8.00	8.12½	7.75	53.62½	54.00	4.30	4.15	4.50	*22.90	6.70	35.00
Nov. 10	8.25	8.37½	8.00	53.25	53.62½	4.30	4.15	4.50	*22.90	7.00	35.00

*Nominal quotation. Market range 19.90c to 22.90c.

Warehouse Iron and Steel Prices

Cents per pound for delivery within metropolitan districts of cities specified

STEEL BARS	
Baltimore*	2.60c
Boston††	2.90c
Buffalo	2.95c
Chattanooga	3.05c
Chicago	2.90c
Cincinnati	3.10c
Cleveland	2.90c
Detroit	2.98½c
Houston	2.40c
Los Ang.	3.30c
New Orleans	3.00c
New York‡(d)	3.17c
Philadelphia*	2.60c
Pittsburgh	2.85c
Portland	3.40c
San Fran.	3.55c
Seattle	3.40c
St. Louis	3.14c
St. Paul	3.00c
Tulsa	3.25c

IRON BARS	
Baltimore*	2.60c
Chattanooga	3.05c
Chicago	2.75c
Cincinnati	3.10c
Detroit	2.98½c
New York‡(d)	3.10c
Philadelphia*	2.60c
St. Louis	3.14c
Tulsa	3.25c

REINFORC. BARS	
Baltimore	2.35c-3.00c
Boston	2.75c-3.25c
Buffalo	1.95c
Chattanooga	3.05c
Chicago	1.95c-2.10c
Cincinnati	3.10c
Cleveland	2.22½c
Houston	3.00c
Los Ang. cl.	3.00c
New Orleans	3.00c
New York	3.17c
Phila.	2.62½c
Pittsburgh	3.00c
S. Fran. f.o.b.	3.15c
Seattle	3.50c
St. Louis	3.29c
Tulsa	3.25c
Young.	2.30c-2.60c

SHAPES	
Baltimore*	2.60c
Boston††	3.07c
Buffalo	3.20c
Chattanooga	3.30c
Chicago	3.10c
Cincinnati	3.30c
Cleveland	3.21c
Detroit	3.30c
Houston	2.65c
Los Ang.	3.30c
New Orleans	3.50c
New York(d)	3.27c
Philadelphia*	2.60c
Pittsburgh	3.05c
Portland	3.40c
San Fran.	3.55c
Seattle	3.40c
St. Louis	3.34c
St. Paul	3.25c
Tulsa	3.50c

PLATES	
Baltimore*	2.60c
Boston††	3.08c
Buffalo	3.20c
Chattanooga	3.30c
Chicago	3.10c
Cincinnati	3.30c
Cleveland, ¼ in. and thicker	3.21c
Cleve., 3/16-in	3.20c
Detroit	3.30c
Det., 3/16-in.	3.10c
Houston	3.00c
Los Angeles	3.30c
New Orleans	3.50c
New York (d)	3.30c
Philadelphia*	2.60c
Phila. floor	4.35c
Pittsburgh	3.05c
Portland	3.40c
San Fran.	3.50c
Seattle	3.40c
St. Louis	3.34c
St. Paul	3.25c
Tulsa	3.50c

NO. 10 BLUE	
Baltimore*	2.75c
Boston††	2.90c
Buffalo	3.10c
Chattanooga	3.50c
Chicago	2.95c
Cincinnati	3.10c
Cleveland	3.01c
Det., 8-10 ga.	3.03½c
Houston	3.35c
Los Ang.	3.45c
New Orleans	3.50c
New York	3.17c
Portland	3.65c
Philadelphia*	2.75c
Pitts.	2.85c
San Fran.	3.75c
Seattle	3.65c
St. Louis	3.19c-3.36c
St. Paul	3.45c
Tulsa	3.70c

NO. 24 BLACK	
Balt.*†	3.50c
Boston††	3.75c
Buffalo	3.25c
Chattanooga	4.00c
Chicago	3.70c
Cincinnati	3.85c
Cleveland	3.76c
Detroit	3.78½c
Los Ang.	4.05c
New York	3.65c
Philadelphia*†	3.40c
Pitts.	3.35c
Portland	4.25c
San Fran.	4.25c
Seattle	4.25c
St. Louis	3.94c
St. Paul	3.695c
Tulsa	4.75c

NO. 24 GAL. SHEETS	
Balt.*†	3.75c
Buffalo	4.00c
Boston††	4.35c
Chattanooga	4.25c
Chicago	4.20c-4.30c
Cincinnati	4.45c
Cleveland	4.36c
Detroit	4.45c
Houston	3.57c
Los Ang.	4.65c
New Orleans	4.35c
New York	4.25c
Pitts.**	3.95c-4.20c
Portland	4.85c
San Fran.	4.85c
Seattle	4.85c
St. Louis	4.54c
St. Paul	4.19c
Tulsa	5.10c
Philadelphia*†	4.00c

BANDS	
Baltimore	2.90c
Boston††	3.15c
Buffalo	3.30c
Chattanooga	3.25c
Chicago	3.20c
Cincinnati	3.35c
Cleveland	3.26c
Det. 3/16-in. & lighter	3.28½c
Houston	2.85c
Los Ang.	3.80c
New Orleans	3.20c
New York(d)	3.42c
Philadelphia	2.90c
Pittsburgh	3.10c
Portland	3.90c
San Fran.	3.15c
Seattle	3.90c
St. Paul	3.20c
Tulsa	3.45c
St. Louis	3.45c

HOOPS	
Baltimore	2.80c
Boston	4.15c
Buffalo	3.55c
Chicago	3.20c
Cincinnati	3.35c
Det. No. 14 & lighter	3.28½c
New York	3.42c
Philadelphia	3.15c
Pittsburgh	3.75c
Seattle	5.40c
St. Paul	3.75c

COLD FIN. STEEL	
Baltimore (c)	3.33c
Boston	3.83c-4.33c
Buffalo	3.25c
Chattanooga*	3.90c
Chicago	3.35c
Cincinnati	3.55c
Cleveland	3.25c
Detroit	3.40c
Los Ang.	5.85c
New Orleans	4.25c
New York	3.79c
Philadelphia	3.58c
Pittsburgh	3.20c
Portland (f)	4.75c
San Fran. (d)	5.85c
Seattle (f)	4.75c
St. Paul	3.20c
St. Louis	3.75c
Tulsa	4.65c

COLD ROLL. STRIP	
Boston 0.100 in., 500 lb lots	5.20c
Buffalo	5.25c
Chicago (b)	5.65c
Cincinnati	5.80c
Cleve. (b)	5.55c
Detroit	5.40c
Philadelphia	4.55c
New York	4.55c

(a) Rounds, hex. only
(b) Net base straightening, cutting boxing 1 ton or more.
(c) Plus mill, size and quantity extras.
(d) Minus quant. diff.
(e) New mill classif.
(f) Rounds only.

‡Domestic bars.
*Plus quan. extras.
**Under 25 bundles.
*†50 or more bundles.
†New extras apply.
††Base 40,000 lbs., extras on less.

Prices at Detroit, Cleveland, Chicago, Pittsburgh, Cincinnati, Chattanooga, New York Boston, St. Louis on heavier lines are subject to new quantity differentials:

399 pounds and less up 50 cents; 400 to 9999 pounds, base; 10,000 to 19,999 pounds, 15 cents under; 20,000 to 39,999 pounds, 25 cents under; 40,000 pounds and over, 35 cents under base.

Current Iron and Steel Prices of Europe

Dollars at Rates of Exchange, Nov. 9

Export Prices f.o.b. Ship at Port of Dispatch—By Cable (or Radio)

	British gross tons U. K. ports £ s d		Continental Channel or North Sea ports, metric tons Gold parity, $4.8665 £ s d	
PIG IRON				
Foundry, 2.50-3.00 Silicon.	$14.89	2 18 6	$7.91	1 12 6
Basic bessemer	13.74	2 14 0*	7.30	1 10 0
Hematite, Phos. .03-.05	15.27	3 0 0	....	.....
SEMIFINISHED STEEL				
Billets	$27.36	5 7 6	$11.44	2 7 0
Wire rods, No. 5 gage	38.18	7 10 0	21.90	4 10 0
FINISHED STEEL				
Standard rails	$39.45	7 15 0	$26.77	5 10 0
Merchant bars	1.53c	6 15 0	.69c	3 2 6
Structural shapes	1.67c	7 7 6	.63c	2 17 6
Plates, †¼ in. or 5 mm.	1.82c	8 0 0	.89c	4 1 0
Sheets, black, 24 gage or 0.5 mm.	2.10c	9 5 0	1.27c	5 15 0
Sheets, gal., 24 gage, corr.	2.55c	11 5 0	1.60c to 1.76c	7 5 0 to 8 0 0
Bands and strips	1.76c	7 15 0	.83c	3 15 0
Plain wire, base	1.99c	8 15 0	1.18c	5 7 6
Galvanized wire, base	2.38c	10 10 0	1.38c to 1.40c	6 5 6 to 6 7 6
Wire nails, base	2.72c	12 0 0	1.27c	5 15 0
Tin plate box 108 lbs.	$4.33	0 17 0	....	.....

British ferromanganese $82 delivered Atlantic seaboard, duty-paid. German ferromanganese £9 0s 0d $(43.74) f.o.b.

Domestic Prices at Works or Furnace—Last Reported

	£ s d		French Francs		Belgian Francs		Reich Marks	
Fdy. pig iron, Si. 2.5	$15.91	3 2 6(a)	$13.48	215	$13.57	305	$23.94	63
Basic bessemer pig iron	15.02	2 19 0(a)*	11.60	185	12.91	290	26.41	69.50
Furnace coke	3.82	0 15 0	7.52	120	4.90	110	7.32	19.25
Billets	26.72	5 5 0	25.39	405	19.58	440	36.67	96.50
Standard rails	1.87c	8 5 0	1.96c	700	2.20c	1,100(b)	2.27c	132
Merchant bars	1.59c	7 0 0	1.57c	560	1.07c	535	1.89c	110
Structural shapes	1.99c	8 15 0	1.54c	550	1.07c	535	1.85c	107.50
Plates, †¼-in. or 5 mm.	1.93c	8 10 0	1.90c	680	1.35c	675	2.18c	127
Sheets, black	2.33c	10 5 0§	2.38c	850‡	1.50c	750‡	2.48c	144‡
Sheets, galv., corr., 24 ga. or 0.5 mm.	2.89c	12 15 0	4.06c	1,450	3.00c	1,500	6.36c	370
Plain wire	1.93c	8 10 0	3.16c	1,130	2.60c	1,300	3.04c	177
Bands and strips	2.16c	9 10 0	1.82c	650	1.35c	675	2.18c	127

*Basic. †British ship-plates. Continental, bridge plates. §24 ga. ‡1 to 3 mm. basic price. British quotations are for basic open-hearth steel. Continental usually for basic-bessemer steel a del. Middlesbrough. b Since January.

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Export Distributors: United States Steel Products Company, New York

Bars

Bar Prices, Page 38

A considerable body of opinion is that prices of steel bars will not be changed for first quarter but strong indications that books will be opened Dec. 1 sets Nov. 20 as the final date for filing changes with the American Iron and Steel institute. Well informed steel sellers believe the effort will be to stabilize at 1.75c, Pittsburgh, which at the end of the year will represent an advance of $3 in the base price for many consumers covered on contracts. An advance in cold-drawn bars seems more likely at the moment.

No improvement is appearing in the market for steel bars and current business is almost all in small lots. At Pittsburgh demand for rush shipment of small lots has added to cost and difficulty of maintaining rolling schedules. Precision carbon rounds are quoted at 2.15c, Pittsburgh, and 2.20c, Cleveland. Alloy precision rounds are 2.85c, Pittsburgh.

Chicago mills find specifications for steel bars are steadier and show little decrease. No marked betterment is expected for the remainder of the year, except perhaps some larger automotive needs. Farm implement manufacturers are making little change in their requirements.

In New England specifications are light and buying slow, at 1.85c, Buffalo. With one or two exceptions forging shops are not active. Cleveland bar mills find demand light with prices unchanged.

In the East prospective railroad buying, particularly by the Pennsylvania, brightens the outlook in steel bars. Otherwise the market is dull.

Plates

Plate Prices, Page 38

While in general buying of steel plates is low, some fair tonnages have been placed in the past week and pending projects indicate further buying soon. Strikes in eastern shipyards and a tank shop have interfered to some extent. Inquiry for tank and other fabricated plate products has changed little.

In the New York district since placing of a fair tonnage for railroad repair work demand from that source has declined, but is expected to revive later in the year, under an increased car repair and building program.

Barge building is aiding activity in plates at Pittsburgh. Midland Barge Co. has placed with a Pittsburgh mill 1150 tons of plates for steel pontoons and large-diameter welded pipe, for federal engineers at Memphis, Tenn. Bids were in a narrower range than usual, high and low being separated by $19,000 on a successful bid of $109,000. Considerable plate tonnage will be required for 500 box cars the Pennsylvania will build in its own shops.

The Cleveland plate mill has resumed operations at about 25 per cent of capacity on an accumulation of small orders. An important order booked there is for 2600 tons of plates for car repairs. Two awards of steel for Cleveland watermains will take 2150 tons, 1350 tons going to Alco Products Inc., New York, and 800 tons to National Tube Co., Pittsburgh. Two to four barges for Standard Oil Co., each taking 600 tons of plates, are being figured.

At Chicago 500 tons has been placed for brewery tanks for Marion, Ind. An inquiry for eight barges requiring 600 tons each for the Illinois waterway is current. Great Northern will need about 1000 tons of plates and shapes for repair purposes.

New England plate specifications have improved slightly but buying is light. Bids on about 300 tons for two fuel tanks for Melville, R. I., have been postponed to Nov. 22.

Superintendent of lighthouses, Staten Island, N. Y., asks bids on about 400 buoys of various sizes, for which about 300 tons of plates will be required.

No change has been made in prices.

Platemakers expect to receive 5000 to 6000 tons of plates from the Pennsylvania shortly, including requirements for box cars. A substantial ship tonnage is pending. Miscellaneous demand is quiet.

Contracts Placed

2500 tons, gas holder, Washington, through Bartlett-Hayward Co., Baltimore, to an eastern Pennsylvania mill.

2200 tons, gas holder, Prince George Gas Corp., Chillum, Md., to Bartlett-Hayward Co., Baltimore.

1350 tons, shapes and plates, nine 165-foot patrol boats, United States coast guard; three to Marietta Mfg. Co., Fort Pleasant, W. Va., $248,210 each; three to Manitowoc Shipbuilding Corp., Manitowoc, Wis., $248,800 each; three to Lake Union Drydock & Machine Works, Seattle, Wash., $236,253, each.

1150 tons, 48 pontoons and 48 sections of welded pipe, Memphis, Tenn., engineers, to Midland Barge Co., Midland, Pa.

500 tons, tanks, Kiley Brewing Co., Marion, Ind., to Graver Tank & Mfg. Corp., East Chicago, Ind.

200 tons, three 250-horsepower boilers, naval base, San Diego, Calif., to unnamed interest.

150 tons, standpipe, Wildwood, N. J., to Tippett & Wood Co., Phillipsburg, N. J.

Unstated tonnage, two tanks, 165,000-gallon capacity, Standard Oil Co. of Louisiana, Memphis, Tenn., to Chattanooga Boiler & Tank Co., Chattanooga, Tenn.

Contracts Pending

386 tons, plates and shapes, mostly former, Panama; bids Nov. 3; Central Iron & Steel Co., Harrisburg, Pa., low on bulk.

300 tons, two fuel oil tanks, naval depot, Melville, R. I.; bids postponed to Nov. 22.

150 tons, elevated steel water tank, Hartsville, S. C.; federal loan approved.

100 tons, standpipe, Latham water district, Colonie, N. Y.; bids in.

Unstated tonnage, 2500 steel riser plates, Norfolk & Western; bids Nov. 22.

Unstated tonnage, 150,000-gallon elevated steel water tank, West Union, Iowa; federal loan approved.

Unstated tonnage, nine 10,000-gallon steel tanks, ordnance depot, Pedricktown, N. J.; bids Nov. 15.

Railroads

Track Material Prices, Page 39

Assurance given by Joseph B. Eastman, federal co-ordinator of railroads, that most of the 844,000 tons of rails needed by railroads would be placed within about ten days has given heart to this market. In this eventuality rail mills can begin production in December. Various roads are engaged now in completing arrangements for loans to finance these purchases.

Pennsylvania leads in size of its rail requirements, with 100,000 tons. Bids on these rails will be opened Nov. 23, under the Clayton act. New York, New Haven & Hartford has authorized purchase of 25,000 tons of rails and 10,000 tons of accessories. The Chicago, Milwaukee, St. Paul & Pacific is to buy 50,000 tons and the Rock Island 20,000 tons, with 6400 tons of fastenings. Boston & Maine will buy 30,000 tons, Maine Central 10,000 tons, and the Reading 5000 tons rails and 1500 tons of accessories. The Pennsylvania opening, in addition to the rails, will include 31,000 tons of tieplates, 6800 tons of splice bars, 3500 tons of spikes, 600 tons steel wheels, 500,000 pieces bond wire and 4500 tons of plates, shapes, bars and sheets, the latter for shops at Altoona, Pa., said to represent only miscellaneous requirements.

Carbuilding is spurred by the award of 500 steel automobile boxcars with special loading devices by

the Pennsylvania to its own shops. Of the 7028 cars on this road's program probably 3500 to 4000 will be built in its own shops.

Great Northern railroad will repair 500 cars in its own shops, requiring about 1000 tons of steel. Detroit, Toledo & Ironton has asked bids on material to modernize 100 to 300 box cars.

Domestic freight car awards in October totaled 514, of which 500 were refrigerators for Armour & Co. Comparisons follow:

	1933	1932	1931	1930
Jan.	3	159	100	5,072
Feb.	0	35	50	17,027
March	5	105	2,166	6,118
April	50	0	2,798	1,997
May	8	60	20	1,392
June	500	0	1,910	998
July	306	25	617	1,389
Aug.	202	5	1,304	1,111
Sept.	23	1,298	703	576
Oct.	514	0	980	4,116
10 Mo.	1,611	1,687	10,648	39,796
Nov.	.....	2	35	2,621
Dec.	.....	50	11	2,729
Total	.....	1,739	10,694	45,146

Car Orders Placed

Pennsylvania railroad, 500 automobile box cars, to own shops.

Rail Orders Pending

Pennsylvania railroad, 100,000 tons made up of the following sizes: 72,000 tons of 131-pound sections; 27,000 tons of 152-pound sections; and 1000 tons of 112-pound sections. Purchase expected for 1934 delivery.

Sheets

Sheet Prices, Page 38

Sheet producers look forward to automotive needs to provide a fair volume of business in the latter part of November and December, as builders begin production of new models. Moderate size orders already have lifted production at some northern Ohio mills, now ranging from 25 to 50 per cent. In some quarters it is believed purchasing by the automotive industry will be deferred as long as possible, with the thought that if the NRA should be shelved and codes be discarded lower prices might develop, but producers do not expect any such developments. Gen-

At Pittsburgh, railroad repair work and the building of 500 new cars by the Pennsylvania railroad is expected to develop some sheet business. The present schedule of prices follows: 2.25c, Pittsburgh, for black; 2.85c for galvanized; and 1.75c for heavy sheets 24 to 28 inches wide.

Eastern mills will open their books for next quarter Dec. 1, according to present indications. Under the code any changes in prices, in order to conform with this program, will have to be filed Nov. 20.

At Philadelphia, sheet seconds are moving somewhat more freely, as a result, it is said, of regulations permitting producers to sell at a price of $8 under the prime market. Under a previous ruling of the steel code producers were permitted to sell only at the price of the next lowest standard grade. This amounted to a differential of around $5 to $6 in most cases, and was not sufficient to allow resellers a satisfactory profit in handling seconds, with a resultant accumulation of this material at the mills.

Buying by radio manufacturers leads in a quiet market at Philadelphia.

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Sales Offices in all principal cities

Shapes

Structural Shape Prices, Page 38

Public works projects are developing in larger number, but volume is comparatively light, and total structural steel awards for the week are lower, at 7055 tons. Private work still is in abeyance.

Some steel producers point out that steel for general contracts now being awarded will not be required in many instances until early next year, and suggest that the fabricators should be permitted to go ahead with the ordering and fabricating, to provide winter employment.

At New York close to 45,000 tons of structural steel is pending for four projects, with an increasing number of small jobs.

At Pittsburgh bids will be opened Nov. 15 on the 800-ton plate girder span for the Pennsylvania railroad to be built at East Aurora, N. Y. Interest there is attracted to the 14,000-ton New York Central grade separation at Syracuse, N. Y., for action early in December. The Pennsylvania railroad's decision to complete eastern work will be of immediate benefit to Pittsburgh district mills, as it will release 20,000 to 25,000 tons of steel which have been on fabricators' books there for over two years.

At Chicago, among new structural awards of 4000 tons, 2500 tons of piling for Mississippi river lock No. 16 at Muscatine, Iowa, is outstanding. Inquiries there are headed by 2200 tons for airplane hangars at San Francisco and 1250 tons for a soda ash plant at Beaumont, Tex.

Superstructures for four New England bridges expected out within the next few weks, will take approximately 10,000 tons.

Detroit voters Nov. 7 approved a project for 20½ miles of subway, requiring a large steel tonnage.

Little tonnage was placed at Philadelphia. The trade there does not expect a price advance for the first quarter.

Contracts Placed

2500 tons, piling, Mississippi river lock No. 16, Muscatine, Iowa, to Inland Steel Co., Chicago; Central Engineering Co., Davenport, Iowa, general contractor.

720 tons, horses and props for dams Nos. 45, 46, 49 and 50, Owensboro, Ky., to American Car & Foundry Co., New York.

550 tons, bridge, Supply, Okla., to Capitol Steel & Iron Co., Oklahoma City, Okla.

360 tons, terminal building, Jacksonville, Fla., to Ingalls Iron Works Co., Birmingham, Ala.

300 tons, bridge, Henniker, N. H., to Lackawanna Steel Construction Corp., Buffalo.

300 tons, county bridge, Lackawanna county, Pennsylvania, to McClintic-Marshall Corp., Bethlehem, Pa.

290 tons, stock house, Kreuger Brewing Co., Newark, N. J., to McClintic-Marshall Corp., Bethlehem, Pa.; material bought direct by owner.

250 tons, bridge, Atoka county, Oklahoma, to Illinois Steel Bridge Co., Jacksonville, Ill.

246 tons, state bridges, Belmont-Phillips creek, Allegany county, New York, to Lackawanna Steel Construction Corp., Buffalo; H. E. Bunce, Hornell, N. Y., general contractors.

240 tons, garage, Johns Hopkins hospital, Baltimore, to Truscon Steel Co., Youngstown, O.

201 tons, highway bridge, Sequoyah county, Oklahoma, 154 tons of shapes and 47 tons of bars to Capitol Steel & Iron Co., Oklahoma City; Hyde Construction Co., Enid, Okla., general contractor.

200 tons, bridge, Paris, Tenn., to Bedford Foundry & Machine Co., Bedford, Ind.

200 tons, power plant, New York, New Haven & Hartford railroad, Cos Cob, N. Y., to Berlin Construction Co., Berlin, Conn.

180 tons, grade separation for Erie railroad, Elmira, N. Y., to American Bridge Co., Pittsburgh.

175 tons, bridges, De Witt county, Illinois, to Illinois Steel Bridge Co., Jacksonville, Ill.

175 tons, bridge, Ketchum, Iowa, to American Bridge Co., Pittsburgh.

170 tons, storage building, West End Brewing Co., Utica, N. Y., to Utica Steam Engine & Boiler Works, Utica.

165 tons, building extension No. 27, naval base, San Diego, Calif., to Kyle Steel Construction Co., Los Angeles.

145 tons, bridge, Northern State parkway, section 2, Nassau county, New York, to National Bridge Co., Long Island City, N. Y.; through Norwin Construction Co. Inc.

140 tons, building for Producers' Milk Co., Cleveland, to Austin Co., Cleveland.

133 tons, state bridge, Friendship-Bolivar, Allegany county, New York, to

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Shape Awards Compared

	Tons
Week ended Nov. 11	7,055
*Week ended Nov. 4.	13.859
*Week ended Oct. 28	20,735
This week in 1932	8,887
Weekly average, 1932	14,285
Weekly average, 1933	14,087
Weekly average, Oct.	14,719
Total to date, 1932	748,578
Total to date, 1933	648,034

*Revised

Lackawanna Steel Construction Corp., Buffalo; H. E. Bunce, Hornell, N. Y., general contractor.
120 tons, Woolworth store, Fulton street (Manhattan), New York, to George A. Just Co., Brooklyn, N. Y.
100 tons, two bridges, York county, Pennsylvania, to McClintic-Marshall Corp., Bethlehem, Pa.
100 tons, shapes and bars, bridge and approaches, Andover, N. H., to McClintic-Marshall Corp., and Kalman Steel Corp., Bethlehem, Pa.; Davison Construction Co., Manchester, N. H., general contractor.
100 tons, storage building, Chicago, to Wendnagel & Co., Chicago.
100 tons, piling for bridge, Independence, Wis., to Inland Steel Co., Chicago; through Worden-Allen Co., Milwaukee.
Unstated tonnage, shapes and bars, state bridge, Herkimer county, New York, to American Bridge Co., Pittsburgh, and Concrete Steel Co., New York; Law Bros., Herkimer, N. Y., general contractors.
Report in Nov. 6 issue of award of 950 tons for bridges in Lauderdale county, Mississippi, to Stupp Bros. Bridge & Iron Co., St. Louis, is corrected to 57 tons.

Contracts Pending

8000 tons, West side elevated highway, Thirty-eighth to Forty-sixth street, Manhattan (New York); Poirier & McLane Corp., New York, low.
8000 tons, estimated, three bridges, Cape Cod canal, including two highway spans, Bourne, Mass., and one railroad lift span, Buzzards Bay, Mass.; Fay, Spofford & Thorndike, engineers, Boston, in charge of two former.
4000 tons, roller crest dam, Montgomery island, Ohio river below Pittsburgh; plans out, bids Dec. 12. Briefly mentioned in STEEL Oct. 30 as 3000 tons.
4000 tons, federal office building, San Francisco; Great Lakes Construction Co., Chicago, low.
1250 tons, soda ash plant, Beaumont, Tex.
1000 tons, Mississippi river lock No. 6, Trenpaleau, Wis.; Spencer, White & Prentis, New York, low on general contract.
1000 tons, Mississippi river lock No. 7, Dresbach, Minn.; Nolan Bros., Minneapolis, low on general contract.
1000 tons, state highways and bridges, New York; bids Nov. 21.
890 tons, Campostella bridge, eastern branch, Elizabeth river, Norfolk, Va.; bids Nov. 14, department of highways, Richmond, Va.
800 tons, DuPont high school, Wilmington, Del.
600 tons, highway bridge, Wrightstown, Wis.
510 tons, five state highway bridges, Georgia; bids of Nov. 7.
500 tons, variable, 50 to 200 radio antenna towers, department of commerce, Washington; Truscon Steel Co., Youngstown, O., low.
460 tons, highway bridge, Avon, N. Y.
450 tons, government hangar, Ft. Bragg, N. C.
415 tons, two state highway bridges, Woolwich, Me.; bids Nov. 8.
350 tons, postoffice, Cambridge, Mass.; John Bowen Co., Boston, awarded general contract.
300 tons, bridge, Tippecanoe City, O.
290 tons, highway bridge, Wydesboro, N. C.; bids of Nov. 8.
265 tons, piling, Chicago pumping stations; bids Nov. 17 to Chicago commissioner of public works.
250 tons, bridge, Luling, La.
250 tons, officers' quarters, Ft. Bliss, Tex.
250 tons, gas holders, South America.
225 tons, various road and bridge projects for Ohio; bids to department of highways, Columbus, Nov. 17.
225 tons, bridge, Winchell, Tex.
200 tons, brewery, Oklahoma City, Okla.
200 tons, airplane hangar, St. Petersburg, Fla.
125 tons, building for Crystal Springs Brewing Co., Cleveland; bids being taken.
125 tons, postoffice, Lewiston, Me.; Coath & Goss, Chicago, awarded general contract.
100 tons, postoffice, Asbury Park, N. J.; David Gordon Building & Construction Co., Cincinnati, general contractor.

Reinforcing

Reinforcing Bar Prices, Page 39

Concrete bar demand is moderate, and prices are steady.

An increase in the number of small jobs being figured is noted in the New

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York district. Contractor buyers there have been unable to weaken the market.

Pending requirements in New England are reported the heaviest in months.

Chicago reports a fairly large tonnage for state bridges, river locks and several municipal plants still pending. New inquiries are light, but the large number of prospective construction projects assures a fair tonnage of bar business in the near future.

Stock lengths of new billet steel bars remain 1.80c, Pittsburgh, or 1.90c for cut lengths. Another Pennsylvania state highway letting is scheduled for Nov. 16, for approximately 117,000 square yards of reinforced concrete pavement.

The largest award for the week was 800 tons, for Cleveland's easterly sewage disposal plant, with 2460 tons still pending for this project.

Philadelphia reports that pending operation of the distributors' code, prices are unsettled.

Contracts Placed

800 tons, easterly sewage disposal plant, Cleveland, to Concrete Steel Co., New York; through Lowensohn Construction Co., Cleveland. Approximately $20,000 worth of valves and fittings for project awarded to Chapman Valve Mfg. Co., Indian Orchard, Mass.

350 tons, mesh, paving, Jones beach parkway, Long Island, New York, to American Steel & Wire Co., New York; through Good Roads Construction Co.

205 tons, state highway work and bridges in six counties, Montana, to unnamed interests.

180 tons, barracks, West Point, N. Y., to Carroll-McCreary & Co. Inc., Brooklyn; C. & W. Construction Co., Bronx, N. Y., general contractor.

176 tons, Panama, schedule 2914, to Laclede Steel Co., St. Louis.

150 tons, highway, Rockland county, New York, to American Steel & Wire Co., New York; through Miller Bros. Construction Co.

115 tons, bridge, Mystic river, Medford, Mass., to Joseph T. Ryerson & Son Inc., Boston.

100 tons, bridges, Irion county, Texas, to Austin Bros., Dallas; through W. S. Crawford Co.

100 tons, mesh, Mitchell field, New York, to American Steel & Wire Co., New York; through Good Roads Construction Co.

100 tons, highway bridges, between Cuero and Hochheim, De Witt county, Texas, to Truscon Steel Co., Dallas; Fitzpatrick Construction Co., Austin, Tex., general contractor.

Concrete Awards Compared

	Tons
Week ended Nov. 11	2,100
Week ended Nov. 4	3,533
Week ended Oct. 28	3,885
This week in 1932	1,650
Weekly average, 1932	3,920
Weekly average, 1933	3,527
Weekly average, Oct.	4,852
Total to date, 1932	191,897
Total to date, 1933	162,277

Contracts Pending

1200 tons, bridges for Erie railroad, Elmira, N. Y.; Folwell Engineering Co., Chicago, general contractor.

425 tons, substructure, bridge, Saugus river, Lynn-Revere, Mass.; Crandall Engineering Co., Cambridge, Mass., general contractor.

400 tons, Campostella bridge, eastern branch, Elizabeth river, Norfolk, Va.; bids Nov. 14, department of highways, Richmond, Va.

340 tons, highway, 3.093 miles, route 10, section 6, Succasunna to Lake Hopatcong road, Morris county, New Jersey; bids Nov. 27 at Trenton.

325 tons, highways, Nevada and Jackson counties, Arkansas; bids in Nov. 10.

295 tons, federal engineer, Washington; Truscon Steel Co., Youngstown, O., low; bids Nov. 6.

215 tons, highway 4.8 miles, Coal Creek to Norris Dam, Tennessee Valley Authority; W. W. Boxley & Co., Roanoke, Va., general contractor.

188 tons, Panama, schedule 2917; bids Nov. 16.

158 tons, grade separation, Grand Central Parkway, Queens, N. Y.; bids in.

100 tons, various road and bridge projects for Ohio; bids to department of highways, Columbus, Nov. 17.

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PHOENIXLOY
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PITTSBURGH ROLLS CORPORATION
PITTSBURGH, PA.

Bolts and Nuts

Bolt, Nut, Rivet Prices, Page 39

Bids on about 2000 tons of high tensile bolts, nuts and washers for the Midtown Hudson tunnel for the port authority of New York were opened Nov. 8. Oliver Iron & Steel Corp., Pittsburgh, bid $177,664.08 and Bethlehem Steel Corp., Bethlehem, Pa., $215,940. Award will be made later. It is required that 30,000 bolts and nuts and 60,000 washers will be ready for shipment by March 1, 1934, and the contract be completed by June 1, 1934.

Buyers of bolts and nuts are in the market infrequently, mainly because of the fairly heavy buying in October, driven in by the Nov. 1 price advance, which places bolts and nuts at 70 off list; large rivets 2.75c, Pittsburgh, and 2.85c, Chicago; small rivets 70 and 10 off list. Wrought washers hold at 6.00 to 6.25 off list, Pittsburgh, Chicago or Philadelphia. At Cleveland buying is 50 to 60 per cent of the July rate.

Pipe

Pipe Prices, Page 39

Gradual approval of public works financing is building up volume of new pipe business, although awards in general continue spotty. Advance of $5 a ton has been made in cast pipe prices in the East to $40, eastern foundry, for class B, 6-inch and over. A similar increase is expected in other market centers.

For Cleveland watermains approximately 6500 tons of iron and steel pipe was awarded during the week.

Inquiries are led by one from Chicago for 2345 tons of 12 and 16-inch cast pipe. Kenosha, Wis., will close Nov. 18 on 932 tons of 24-inch pipe.

Pittsburgh reports demand for seamless pipe has failed to improve, except for slight activity in mechanical tubing and boiler tubing. Prices on standard pipe there continue as of the card under last July 1.

Bayonne, N. J., requirements, 1800 tons of 42-inch, will be bought through the contractor, Harrison Construction Co., New York, being low.

Production in the Birmingham, Ala., district is moving upward.

Transport Refining Co., Los Angeles, is planning a 30-mile oil pipeline from a projected refinery at Baca, N. Mex., across the Continental divide, to a railroad terminus.

Cast Pipe Placed

4400 tons, Cleveland watermain No. 3, to United States Pipe & Foundry Co., Burlington, N. J.; through Lowensohn Construction Co., Cleveland. Approximately $15,000 worth of valves for project awarded to Chapman Valve Mfg. Co., Indian Orchard, Mass.

229 tons, 20-inch, Chicago, to Glamorgan Pipe & Foundry Co., Lynchburg, Va.

170 tons, for Quincy, Mass., to Donaldson Iron Works, Emaus, Pa.

Steel Pipe Placed

2150 tons, Cleveland watermains Nos. 1 and 3; 1350 tons of 36-inch to Alco Products Inc., New York; 800 tons of 30-inch to National Tube Co., Pittsburgh.

Cast Pipe Pending

2345 tons, 12 and 16-inch, Chicago; bids Nov. 17 to commissioner of public works.

932 tons, 24-inch, Kenosha, Wis.; bids Nov. 18.

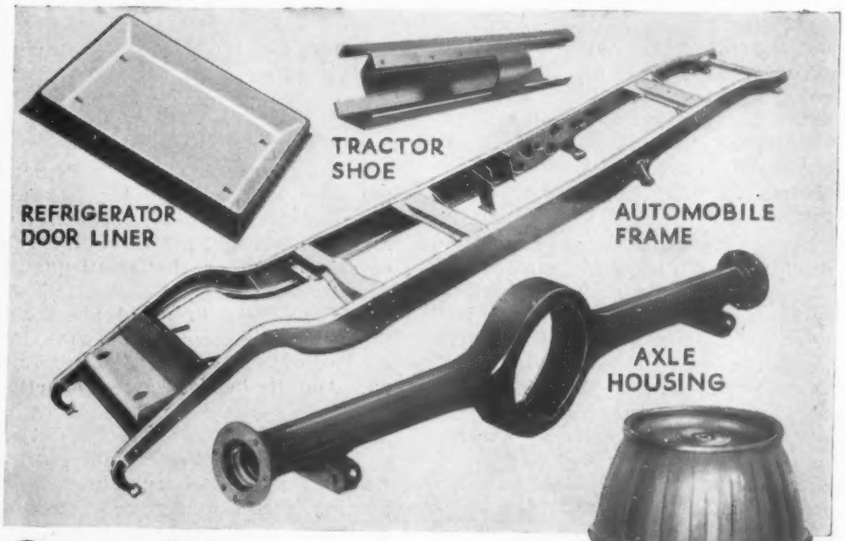
Lee Spring Co. Inc., 30 Main Street, Brooklyn, N. Y., now is producing a full line of stainless steel springs, of both wire and flat material.

Iron Ore

Iron Ore Prices, Page 40

Cleveland—Pittsburgh Steamship Co., United States Steel Corp.'s Great Lakes subsidiary, has stopped transporting iron ore for this season, and is laying up its boats. Some independent shippers will operate until about Nov. 20, and it now is believed 650,000 tons of ore will be brought down this month to top the 20,842,083 tons previously shipped this season. Receipts at Lake Erie ports for the season to Nov. 1 were 15,380,486 tons, and shipments from these ports to interior furnaces 11,445,387 tons. Stocks on Lake Erie docks Nov. 1 totaled 5,301,505 tons, compared with 5,223,086 tons Nov. 1, 1932.

Egypt in September bought from makers in the United States two tons of galvanized sheets and one ton of bolts and nuts.



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Warehouse

Warehouse Prices, Page 42

Buying of steel products from warehouses appears to be slightly below the rate maintained in September and October, but is holding well against seasonal influences. Demand is somewhat irregular, masking exact judgment of the trend. In general the present trend is indicated as slackening. Prices show no change.

Pittsburgh sellers expect an advance on the cold-drawn base of 3.20c to equal a 10-cent advance at Chicago to 3.35c. To preserve the agreed differential the Pittsburgh price should be 3.30c. A Pittsburgh refining company has placed a large steel order with warehouses there, for repair purposes. The order included plates, shapes, bars and tubing.

Sales from store are tapering gradually at Chicago, regarded as seasonal, but volume is substantially heavier than at this time last year. Bars and flat-rolled products are more active than heavier steel. Detroit stores find buying is at about the same rate as in September and October, considered encouraging at this season and in face of the interruption by the tool and diemakers' strikes, now settled.

Some Cleveland stores find a slight increase in buying, orders being numerous but for light quantities. St. Louis reports demand irregular and show no gains except a few dictated by seasonal factors. Plates and sheets have been bought by stove manufacturers but this demand has lessened. New York dealers find little change in volume and none in prices.

Cincinnati stores are experiencing a decline in demand after three months of steady selling. Until now demand has been well above the same period of last year.

In the East changes in prices of warehouse products are being considered. Business in general is slow.

Wire

Wire Prices, Page 39

Little change is noted in demand for wire and nails and prices are based on $2.10 per keg for nails and 2.10c, Pittsburgh, for wire. As a rule current orders are for small quantities, though fairly frequent, indicating a tendency to avoid accumulations. Announcement relative to first quarter prices is expected after Nov. 20. Activity in highway construction is bringing active demand for wire mesh.

Jobbers and the manufacturing trade in the Pittsburgh district are making scarcely any new commitments in wire products. Bolt, nut and spring manufacturers are out of the market and rural demand this fall has now definitely been written off.

Cleveland mills find orders numerous and from a diversified range of consumers, but individually small. Total bookings are less than in recent months. Bolt manufacturers, receiving little automotive and railroad business, are specifying lightly.

At Chicago demand is quiet but shows little further decrease. Rural distributors find slight change in movement. Some consumers of manufacturers' wire notably the automotive industry, will require further tonnage this year.

New York sellers expect an advance in prices of wire and nails before the end of the month, based on well-informed trade opinion. Buying is quiet in that area and specifications in small lots make most activity.

In New England a decline in wire-drawing operations has been halted for the moment but new buying is small. Government orders are aiding some mills there.

First of several expected advances in wire products has been filed, effective Nov. 19, on fishhook wire, to 6.75c, Worcester, Mass.

Strip

Strip Prices, Page 39

Strip producers are experiencing a major decline in demand, buying having dropped sharply and mill backlogs are unusually low. An important Pittsburgh producer operated only two mills a few days last week, contrasted with continuous operation a month ago. Prices are firmly quoted at 1.75c, Pittsburgh, on hot-rolled and 2.40c, Pittsburgh, on cold-rolled.

Chicago stripmakers believe the recent decline of production to about 25 per cent is only temporary and that when consumption has used up excess stocks buying will increase. New automotive models are relied on to increase buying soon.

Cleveland mills are receiving a few inquiries from automotive sources but large buying from Detroit is not expected until late in the month. The market apparently is in a waiting attitude. Consumers of cold-rolled strip in the New York district are buying little, present requirements being largely covered previously. Hot-rolled strip at that point is 2.08c, and cold-rolled 2.73c, delivered.

New England stripmakers find an irregular gain in spot orders for cold-rolled strip, though the total remains light. Large consumers are well covered. Current bookings are taken at 2.60c, Worcester, for cold-rolled.

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HIGH STEARNS DUTY

Pig Iron

Pig Iron Prices, Page 40

Chief concern among pig iron buyers is over first quarter prices, and with some sentiment favoring an advance, melters are specifying fully against present contracts, tending to keep shipments up to the level of recent weeks. Indications are that books for first quarter will be opened Dec. 1; any price changes thus would be filed around Nov. 20. In some districts producers do not believe the present state of the market would support an advance.

Current sales in the Pittsburgh district are going at $18, Neville Island, on foundry grades; $18.50, Neville Island, on bessemer iron. Basic iron is without test at $17.50, same base. Pittsburgh foundries have been asked for bids on 270 pieces of iron ballast balls and sinkers with forgings cast in, totaling 331 tons, by the Staten Island, N. Y., superintendent of lighthouses.

Shipments to Chicago melters are heavier than a month ago, although consumption is still declining. Farm implement manufacturers are beginning to increase requirements.

Cleveland likewise reports shipments ahead of October, but with new sales at a much lower rate.

Sellers in the New York district are placing considerable store in the possibility of railroad equipment buying late in the year and early in 1934.

At Boston, foundry iron is firm at $18, Everett, Mass., base with all domestic sellers, but the usual 38-cent differential applies on what southern iron is moving.

Certain specialty manufacturers in the St. Louis district have increased operations one Illinois tractor manufacturer operating at full capacity and ordering out more iron.

Possibility of a step-up in blast furnace operations in the Buffalo is being discussed.

New business at Birmingham, Ala., is still below current production.

Sales for the week in Toronto, Ont., were higher, but melters are reported showing no interest in future needs.

New buying in the Cincinnati trade is almost entirely confined to carload lots, with the exception of a 400-ton purchase last week by a specialty manufacturer.

Pennsylvania railroad is inquiring for 300 tons of foundry iron and may buy substantially more, according to Philadelphia trade opinion. Recent importations at this port include 1200 tons of Indian iron. Total imports for October at Philadelphia totaled approximately 7600 tons.

Ferroalloys

Ferroalloy Prices, Page 40

Ferromanganese specifications are falling less sharply, in line with the slowing up in the decline in steelmaking operations. Ferromanganese is unchanged at $82, eastern seaboard, for carlot shipments. Domestic spiegeleisen, 19 to 21 per cent, is unchanged at $27, furnace, on spot shipments. Importations of ferromanganese have been at a higher rate than in the preceding two years. Government statistics indicate that 31,588 gross tons were received from abroad during the first eight months, against 28,910 tons in all of 1932, and 32,386 in 1931.

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Scrap

Scrap Prices, Page 41

Pittsburgh — Declining from a purely nominal level, the market has eased off 75 cents to $1 a ton centering about a small sale of heavy melting steel in this district between $11.50 and $12 recently. However, even at the revised market on heavy melting steel, which is considered between $11.25 and $11.75 in this district, and other grades in proportion, underlying conditions are weak. The absence of consumer buying is clearly substantiated by results of bidding on the recent Pennsylvania railroad list. Although part of this went as high as $11.25, lots were sold all the way down to $10.50, the latter being for dealers' yards. Turnings appear especially distressed with unsuccesful efforts to sell at considerably below a nominal $8 to $8.50. Among railroad lists closing last week were the Nickel Plate, Wabash, Pere Marquette, and Baltimore & Ohio.

Cleveland—Lower quotations are being offered on most scrap grades here, as buying remains at a minimum. Lessened melt has caused mills and foundries to remain out of the market and only occasional small lots are moving.

Chicago—Scrap buying continues dull with general activity at about the lowest ebb of the year. While last sales of heavy melting steel were made at $9, some sellers are willing to take orders at $8.50, and with material being picked up at depressed prices the market may be quoted 50 cents lower at $8 to $8.50. It is conceded that any material improvement in demand would result in higher prices. Railroad offerings have received low bids, in some cases rejected.

Boston—Demand is sluggish with prices inclined to weakness. The Worcester, Mass., consumer has lowered its prices 25 cents on heavy melting steel grades and skeleton scrap, making $6.50, delivered, Worcester, the price for No. 1.

New York—Light scrap buying offers no price test on most grades, although railroad lists are bringing low bids for heavy melting steel. No. 1 is unchanged in this district, with dealers paying $7.50 for barge loading. Buying for export continues to furnish most activity. Domestic steel works and foundries are taking minimum shipments, if any.

Buffalo—There is no tonnage demand for scrap. The principal consumer of stove plate here has suspended operations. Melt of open hearth grades has been reduced sharply.

Philadelphia—Scrap is inactive and little change is expected for the present. No. 1 heavy melting steel is down on light trading to $9.50 to $10. No. 2 is unchanged at $8 to $8.50, but with the lower figure more representative. Foreign buyers are offering $7.25 to $7.50, f.a.s. for this grade, which is about on a parity with the domestic market. Trading is dull.

The principal eastern consumer has closed on a few hundred tons of No. 1 steel for Sparrows Point, Md., at $8.85 delivered, and on 700 to 800 tons for Lackawanna, N. Y., at $9, delivered.

Detroit—Iron and steel scrap quotations are unchanged this week on the basis of $7 to $7.50 for No. 1 heavy melting steel and hydraulic compressed sheets, but these prices are fragile and the market as a whole is extremely weak. Melters appear unwilling to commit themselves, regardless of price. Offerings of scrap will probably begin to expand late this month and in December as production is started on new models. The lake shipping season is virtually over.

Cincinnati—Prices of iron and steel scrap are soft, with no fair test in the absence of buying. Little interest was shown in this district in current lists of the Norfolk & Western, and the Chesapeake & Ohio.

St. Louis—The market for iron and steel scrap exhibits further weakness, with demand from all sources limited. Additional cuts of 25 cents to $1 per ton have been applied on heavy melting steel, steel angle bars, iron car wheels and some other items.

Birmingham, Ala.—Iron and steel scrap is dull but dealers are purchasing in anticipation of a turn. Heavy melting steel is moving more slowly now than for long time.

Toronto, Ont.—Trading in iron and steel scrap is specialized and spotty, with little demand for heavy melting steel and turnings, export or domestic. Mills are well stocked.

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Tin Plate

Tin Plate Prices, Page 38

Pittsburgh — Tin plate manufacturers report demand is strong enough to enable them to schedule capacity operations for the remainder of November at least. However, with one or two exceptions a reduction is expected in December. This is the beginning, ordinarily, of the canmakers' dull season. Next week undoubtedly will see an announcement of the 1934 price of tin plate for contracts. In the meantime, specifications are being filled at $4.25 price, and only in occasional instances has $4.65, the spot price, been applied. Long ternes are 2.90c, base, Pittsburgh, and tin mill sizes of black sheets, 2.50c.

Pacific Coast

Pacific Coast Prices, Page 39, 40, 42

San Francisco—(*By Air Mail*)—Most projects placed during the past week involved less than 100 tons. The largest award was 2915 tons of cast iron pipe for Los Angeles, divided between four makers. No action has been taken on 25,000 tons of rails and 7500 tons of fastenings for the Southern Pacific or on 20,000 tons for the Western Pacific. No. 1 steel rails now are $41.75 a ton, f.o.b. cars, dock, Pacific ports.

Concrete bar lettings totaled less than 300 tons. Awards so far this year are close to 12,000 tons ahead of the aggregate for the same period a year ago. Bids have been opened on 187 tons for a siphon in Los Angeles and on 177 tons and 105 tons, respectively, for highway work in Santa Clara county, California, and for a bridge in Orange county, both for the state.

The only structural award of size went to the Kyle Steel Construction Co., Los Angeles, 165 tons for a building extension at the San Diego naval base. Bids have been opened on 3100 tons for trash racks for the Boulder dam. Wide flange material holds at 2.35c, f.o.b. cars, dock, Pacific ports, and standard shapes 2.25c.

Awards of cast iron pipe were the largest for any week since the early part of July. Los Angeles placed 1371 tons, 657 tons, 504 tons and 383 tons, respectively, with National Cast Iron Pipe Co., R. D. Wood & Co., American Cast Iron Pipe Co. and Pacific States Cast Iron Pipe Co. Long Beach, Calif., opened bids on close to 2200 tons. Taft, Calif. has applied for an NRA loan of $80,000 for over 40,000 feet of treated steel pipe.

Public Works Offer Hope

Seattle—Bids have been called for opening Nov. 20 at Almira, Wash., for excavating 2,000,000 cubic yards of surface material and 400,000 cubic yards of rock at the site of the Grand Coulee dam in eastern Washington.

Pacific coast plants have bids in for opening Nov. 15 for the navy pier and warehouse at Pearl Harbor, T. H., including reinforcing steel, cranes and other materials. No tenders were received by Seattle for the third time for improvement of Railroad avenue, involving a seawall and about 6500 tons of steel items. Contractors were unable to obtain bonds, due to protests of property owners. The city expects to undertake the job on a day labor basis but further delay is certain.

Montana has awarded 13 highway

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projects totaling $1,038,000, including 20 bridges.

Wholesale jobbing trade is slow and no immediate improvement is expected. Prices are firm. Portland and Seattle dealers are attempting to adjust several items at issue. Cast iron pipe demand is temporarily quiet.

The scrap market is unchanged with good export demand for steel rails. This material is available in this territory but owners are disposed to await higher prices.

Steel in Europe

Foreign Steel Prices, Page 42

London—(*By Radio*)—Middlesbrough domestic and export trade in pig iron is developing and an increase in price is expected, October shipments being the heaviest in years. Inquiries for hematite pig iron are being received from Italy and stocks of this grade are becoming low. Structural and railroad shops are well booked. The Midland market is firm and semifinished deliveries run into next year. A small tonnage of Continental bars has been sold here at £6 9s. Domestic sales of galvanized sheets are brisk but exports are dull. The Scottish trade is quiet.

The Continent reports slight improvement in several export markets. The international steel entente has advanced several products.

Equipment

Machinery and equipment markets generally are little changed from last week and although builders in the Worcester, Mass., district are well engaged on a fair backlog of orders, other reports are less encouraging.

In the Pittsburgh territory several steel mills last week began to hold up releases on equipment already ordered and appropriated. A leading mill there even went so far as to order work stopped on two small rolling mill repair jobs, involving only about $10,000.

Chicago reports an increasing volume of inquiries for equipment, but few actual orders. Railroads still defer purchase of needed equipment.

Government work predominates among recent awards, Orton Crane & Shovel Co. being low bidder on two 40 to 50-ton dock cranes for the Brooklyn navy yard, involving expenditure of about $218,000. Four dock yard cranes for Hawaii are pending, while several large cranes will be required for Boulder dam. A number of machine tools have been awarded recently on navy department requirements. Inquiry at New York has slowed, it is reported, although dealers have submitted figures on considerable business.

A truck builder in Cleveland has been buying a fair volume of machines and equipment in connection with manufacture of a new low-price hauling unit.

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Metals

Nonferrous Metal Prices, Page 40, 41

New York—Leading metals held largely unchanged last week despite the government's drive to depress the dollar and raise commodity prices. Tin and copper were exceptions.

Copper—Custom smelters advanced their price Friday to 8.25c, Connecticut, following a rise in foreign prices to above the domestic level due to stronger exchange rates. Buying was not heavy and it was uncertain late in the week how shaded bids would be received. Brass ingot advanced. The trade still is working on a code.

Lead—Sales were confined mostly to carlots. Prices were steady at 4.15c, East St. Louis, and 4.30c, New York.

Zinc—Prices held following the recent decline but consumers entered the market only for occasional small lots.

Tin—Domestic levels skyrocketed to the highest levels since early in 1928 due to a drop in the value of the dollar in terms of pound sterling. Fair business was done in English refined and some in Straits.

Antimony—Prices held unchanged until late in the week. Buying was slow.

Aluminum—Sellers reported slower demand. Prices held.

Coke By-Products

Coke By-Product Prices, Page 39

New York—Demand for distillates has declined, but curtailed production continues to hold prices firm. Lacquermakers are ordering less toluol, although chemical industrial consumption shows little change.

Quicksilver

New York—Quicksilver is quotably unchanged in a quiet market, with round lots at $66 to $67, a virgin flask of 76 pounds, and small lots 50 cents higher.

Cold Finished

Cold Fnished Prices, Page 39

Pittsburgh—No important automotive buying of cold-finished bars

is expected much before another month, owing to lessened automotive assemblies and fairly heavy inventory. Most jobbers are out of the market and miscellaneous buyers are not active. Price on carbon cold-finished is firmly 1.95c, Pittsburgh. Steps are likely to be taken next week on consideration of the long-expected advance in cold-finished. The price of cold-finished bars has not changed since Aug. 1, while hot-rolled bars have been increased $3.

Coke

Coke Prices, Page 39

Although November prices are filed under code and established on beehive coke, both furnace and foundry grades, an advance on by-product coke is expected. With $3.75, Connellsville ovens, the price on standard furnace coke, by-product coke is quoted 50 cents a ton lower in the Pittsburgh district. Opinion is reported favoring a 50-cent advance on by-product coke to wipe out this difference. Beehive foundry coke is quiet but holding at $4.25 per ton on common grades and $5.25 on premium, both minimum.

Semifinished Steel

Semifinished Prices, Page 39

On a gross-ton basis sheet bars, billets and slabs continue at $26, Pittsburgh. Wire rods, likewise gross ton, hold at $35, Pittsburgh, base. Uncropped carbon forging ingots are $28, base, Pittsburgh. Shipments of semifinished steel generally are slower, with the exception of tonnage for tin plate producers.

New Davey Steel Co. Is Beginning Operations

Four hot mills in the plant of the W. H. Davey Steel Co., Cleveland, formerly the Empire mill of the Empire Steel Corp., are being placed in operation.

W. H. Davey, president of the Canton Tin Plate Corp., Canton, O., is president and treasurer of the new company, which has a capitalization of $160,000 in 6 per cent bonds and 25,000 no-par common shares.

H. L. Berno is vice president, E. M. Jones works manager, W. R. Jenkins secretary, and R. Easterday assistant secretary.

Directors are Messrs. Davey, Berno and Jones; F. W. Beach, formerly sales manager of the Mansfield Sheet & Tin Plate Co.; Harold Davey, Detroit sales manager of the Canton Tin Plate Corp.; T. B. Root, president of the George D. Harter bank, Canton, and D. R. James, formerly president of the Empire Rolling Mill Co.

Empire Sheet & Tin Plate Co. Is Organized

Empire Sheet & Tin Plate Co. has become successor to the Empire Steel Corp., Mansfield, O., and has purchased all the assets of the latter except the mortgaged Cleveland plant, including going concern and good will values, it was announced by C. H. Henkel, who will be president of the new company. The sale has been confirmed by the court.

The Mansfield plant, now operating 17 of its 19 mills, has been in continued operation under the receivership, and will continue in the production of special quality sheets and special products. Improvements and betterments are contemplated, and it is also considering production of tin plate.

In addition to C. H. Henkel, the following directors have been chosen: Harry R. Jones, formerly president, United Alloy Steel Corp.; T. O. Kennedy, vice president and general manager, Ohio Public Service Co.; Henry Roemer, president, Sharon Steel Hoop Co.; Henry G. Brunner, president, Ohio Home Owner's Loan Corp.; John B. Putnam, Pickands, Mather & Co.; D. L. Ward, general manager, Interlake Iron Corp.; and John A. Hadden, of Andrews, Hadden & Burton.

Here and There In Industry

S. A. E. STEELS, Cleveland, has been formed to offer warehouse service in special S. A. E. steels, by Arthur B. Betz, Frank H. Mitchell, Elmer Salisbury, John G. Bing and Frank A. Boufford. A warehouse has been established on the premises of the W. S. Bidle Co., 1408 East Forty-seventh street, Cleveland, where stocks will be carried. Mr. Betz has been engaged in the steel warehouse business for 40 years. Mr. Mitchell, sales manager of the new organization, formerly was director of purchases for the Lakewood Engineering Co., Cleveland, and recently for 12 years was district representative for the National Drawn Steel Co., East Liverpool, O. Mr. Salisbury has been purchasing agent for the Cleveland Automatic Machine Co. Mr. Boufford was connected with the National Drawn Steel Co. for nine years.

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Construction and Enterprise

New England

LEXINGTON, MASS.—Town plans erection of a 1,000,000-gallon steel water tank to cost $40,000. J. R. Worcester & Co., 79 Milk street, Boston, are engineers.

New York

BATAVIA, N. Y.—City plans a water supply system to cost $600,000. E. C. Randall, Iroquois building, Buffalo, and associates, offer to form a private company to build and operate plant 25 years. C. W. Hartley is mayor.

ELMIRA, N. Y.—State of New York will take bids Dec. 7 for a power unit and additional cell blocks for the reformatory here. An appropriation of $800,000 has been made.

NEW YORK—Coating Machinery Corp. has been incorporated with 100 shares no par value to manufacture machinery, by Raymond L. Russey, 4321 Morgan street, Little Neck, L. I. Filed by Samuel Saline, 20 Exchange place, New York.

New Jersey

CAMDEN, N.J.—Atlantic Iron & Steel Co. has been incorporated with $125,000 capital to manufacture steel products, by Mark Marritz, Broadway and Cooper street, Camden, N. J.

Pennsylvania

PITTSBURGH—United States engineer, 1506 Keenan building, will receive bids for spillway gates, machinery, structural and electrical material for Montgomery dam in the Ohio river between Beaver and Midland, Pa.

Ohio

CLEVELAND—Selective Machine Co. has been incorporated with 100 shares no par value, by Bovington & Gresinger, Bulkley building, Cleveland.

TOLEDO, O.—Schwab Machinery & Supply Co. has been incorporated with 250 shares no par value, by Brown & Sanger, attorneys, 1007 Nicholas building, Toledo, O.

Michigan

BENTON HARBOR, MICH.—City plans waterworks improvements, including an electric power plant and 250,000-gallon elevated water tank, to cost about $70,000. C. R. Wrightman is director of public works. A federal loan is to be asked.

BENTON HARBOR, MICH.—A federal loan is being sought for construction of a cold-storage plant in connection with the Benton Harbor fruit market, with capacity for 200,000 bushels and 5000 barrels, to cost $221,000. The plans is for the market to liquidate the cost in 30 years.

DETROIT—Gabriel-Noble Mfg. Co., 5465 Lincoln avenue, has been incorporated with $10,000 capital to manufacture, process and machine metal products, by G. Hubart Noble, 2561 Seminole avenue, Detroit.

GRAND RAPIDS, MICH.—Brummeler Steel Products Corp., 413 Iona avenue, has been incorporated with $5000 capital to deal in steel and sheet metal, by Anna Brummeler, Grand Rapids, Mich.

GRAYLING, MICH.—George H. Ruhling, Detroit, has been retained as consulting engineering for a $40,000 waterworks system for this city, if a federal loan is obtained.

NORTHPORT, MICH.—A federal loan has been granted for erection of a waterworks system to cost $35,000. C. Scott, village clerk, is taking bids.

Illinois

ALTON, ILL.—Council will appoint a special commission to study plans for a municipal electric light and power, gas and waterworks project to cost about $1,200,000.

CHICAGO — Fuse Corporation of America, 10 South LaSalle street, has been incorporated with 300 shares capital stock to manufacture fuses and other electric appliances, by Harry Olson, 10 South LaSalle street, Chicago.

CHICAGO—Magenesen Seal & Closure Co., 38 South Dearborn street, room 722, has been incorporated with 100 shares no par value to manufacture enclosures and seals for metal and other containers, by Levering & Miller, First National Bank building, Chicago.

Southern States

WASHINGTON—Bureau of supplies and accounts, navy department, will open bids as follows: Nov. 21, schedule 1093, one brake bending machine for San Pedro, Calif.; schedule 1094, motor-driven rotary shear for San Diego, Calif.; schedule 1095, one motor-driven sheet metal nibbling machine for San Diego, Calif.; schedule 1096, one hydraulic press for San Diego, Calif.; schedule 1074, one motor-driven pipe-cutting and threading machine for San Diego, Calif.; schedule 1075, one motor driven milling machine for Mare Island, Calif.; schedule 1080, one motor-driven rotary shear for San Pedro, Calif.; schedule 1081, two motor-driven screw machines for Puget Sound, Wash.; schedule 1018, one motor-driven scarfing and plate edge plate planer for Philadelphia.

Missouri

ST. LOUIS—DuChesne Mfg. Co. has been incorporated with $10,000 capital to manufacture heating and refrigeration appliances, by H. H. DuChesne, 5090 Easton avenue, president.

ST. LOUIS—Gruman Machine & Appliance Co. has been organized at Kirksville, Mo., to manufacture and sell sewing machines, by H. F. Gruman, president.

ST. LOUIS—Universal Aircraft & Supply Co., 2300 North Ninth street, has been organized to manufacture airplane propellers. C. Rauch Jr. is president.

Oklahoma

BARTLESVILLE, OKLA.—W. C. Price Inc. has been awarded a contract to weld the 216-mile, 10-inch gas pipeline of the Western Gas Co., El Paso, Tex., from Douglas to Phoenix, Ariz. Bechtel-Kaiser Co., Oakland, Calif., has the general construction contract.

PICHER, OKLA.—Prairie Chicken Mining Co. has been incorporated with $25,000 capital to mine for lead and zinc, by Cleve Craig, Picher, Okla.

TULSA, OKLA.—Stanolind Pipe Line Co., Philcade building, has let a contract to Williams Bros., Exchange Bank building, for construction of an 8-inch pipeline, 42 miles long, from Perry, Okla., to Drumright Okla.

TULSA, OKLA.—Jones-Moore Co. has been formed by J. L. Jones and R. O. Moore to operate a machine and welding shop at 108 North Boston street in a new shop 34 x 60 feet. Pipeline and tank welding and general machine work will be undertaken.

Texas

HOUSTON, TEX.—Sinclair Refining Co., 45 Nassau street, New York, is erecting a plant 40 x 100 feet, two stories, at its refinery here, to manufacture cans for oil dispensing. Parker Kendall is plant superintendent.

Wisconsin

MENOMONEE FALLS, WIS.—Falls Equipment Co. has been incorporated with $25,000 capital to deal in iron, steel, nickel and other metals, by Lee H. Payne, W. E. Draheim and P. Merckel.

Pacific Coast

EUREKA, CALIF.—City plans construction of a water and power project on Mad river, estimated to cost $1,200,000 and $375,000 respectively. C. C. Kennedy, Call building, San Francisco, is engineer.

ABERDEEN, WASH.—Northwestern Saw Works, 2501 West Second street, P. J. DeLorme president, plans enlargement and installing grinders for saws and welding equipment, to cost about $75,000.

Dominion of Canada

LONDON, ONT.—Kellogg Co. of Canada will build a 4-story warehouse and shipping department as an addition to its plant at London, Ont. Albert Kahn, Walkerville, Ont., is architect.